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APRIL, 1932

CONTENTS

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MONTHLY WEATHER REVIEW

Editor, W. J. HUMPHREYS

VOL. 60, NO. 4
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APRIL, 1932

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IMPORTANT NOTICE

Owing to the necessity of drastically reducing the printing cost of the REVIEW to keep within the funds for the fiscal year, now drawing to a close, all "contributions" are omitted in this issue. However, it is hoped that "contributions" may be resumed later.—Editor.

BIBLIOGRAPHY

C. FITZHUGH TALMAN, in charge of library

RECENT ADDITIONS

The following have been selected from among the titles of books recently received as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies:

American society of heating and ventilating engineers.
Guide. 1932 ... vol. 10. New York. [c1932.] xiv, 876 p. illus. 23 cm. [Contains articles on air-conditioning.]

Baur, Franz.
Sonnenflecken und Witterung. p. 68–73. illus. 24 cm. (Sonderdr.: Natur und Museum, H. 3, 1932. Frankfurt a. M.)

Blair, W. R., & Lewis, H. M.
Radio tracking of meteorological balloons. p. 1531–1560. illus. 23 cm. (Proc. Inst. radio engin., v. 19, No. 9, Sept., 1931.)

Dines, William Henry.
Collected scientific papers of ... Pub. by the Royal meteorological society. [London] 1931. x, 461 p. figs. plates (fold.) port. 26 cm.

Fortescue, C. L.
Lightning and its effects on transmission lines. East Pittsburgh. n. d. [3], 91, [2] p. plates. 29 cm. [Manifolded.]

Greenburg, Leonard, & Bloomfield, J. J.
Impinger dust sampling apparatus as used by the United States public health service. [Washington. 1932.] p. 654–675. figs. plate. 23½ cm. (U. S. Pub. health service, Pub. health rep., v. 47, no. 12, Mar. 18, 1932.)

Holborn, L., & *others*.
Wärmetabellen. Ergebnisse aus den thermischen Untersuchungen der Physikalisch-Technischen Reichsanstalt. Braunschweig. 1919. 72 p. 23½ cm.

McLennan, J. C., & *others*.
Height of the polar aurora in Canada. p. 285–296. figs. plates. 26 cm. (Canadian journ. of research, v. 5, Sept., 1931.)

Metropolitan life insurance company.
Air conditions and the comfort of workers. New York. n. d. 20 p. illus. 19½ cm. (Industrial health series, no. 5.)

Mosby, Håkon.
Sunshine and radiation ... Bergen. 1932. 110 p. figs. pl. 31 cm. (Norwegian north polar exped. with the "Maud" 1918–1925, sci. results. v. 1, no. 7.)

Nelson, A. L.
Shelterbelts and fruit. Laramie. 1931. 23 p. illus. 23 cm. (Univ. Wyoming. Agr. exp. sta. Bull. no. 179, May, 1931.)

Shaw, [William] Napier.
Manual of meteorology. vol. 4. Meteorological calculus: pressure and wind. (A revised edition of part 4, 1919.) ... With the assistance of Elaine Austin. Cambridge. 1931. xx, 359, xii p. figs. 27 cm.

Sherlock, R. H., & Stout, M. B.
Characteristics of wind gusts. p. 20–24. figs. 29½ cm. (N. E. L. A. bulletin, Jan., 1932.)

U. S. Bureau of standards.
Protection of electrical circuits and equipment against lightning. Preliminary report of the sectional committee on protection against lightning. September 12, 1929. Washington. 1929. ix, 107 p. figs. plate. 20 cm. (Misc. pub. Bur. stand., no. 95.)

SOLAR OBSERVATIONS

SOLAR RADIATION MEASUREMENTS DURING APRIL, 1932

By HERBERT H. KIMBALL, in charge, Solar Radiation Investigations

For a description of instruments employed and their exposures, the reader is referred to the January, 1932, REVIEW, page 26.

Table 1 shows that solar radiation intensities averaged above the normal intensity for April at Washington and Madison, and close to normal at Lincoln.

Table 2 shows an excess in the total solar radiation received on a horizontal surface at all stations except Twin Falls and Lincoln, which show a slight deficit, and Miami, which is very close to the normal.

Table 3 summarizes solar radiation measurements, I_y and I_r obtained by means of the yellow and red glass filters described in the February, 1932, REVIEW, and values of the coefficient of atmospheric turbidity derived therefrom. The turbidity has increased with the season, as was to be expected.

Skylight polarization measurements, obtained at Madison on six days give a mean of 60 per cent and a maximum of 65 per cent on the 8th. At Washington, measurements obtained on nine days give a mean of 58 per cent and a maximum of 63 per cent on the 1st. These are average values for April for both stations.

TABLE 1.—*Solar radiation intensities during April, 1932*

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	Sun's zenith distance: 8 a.m.	78.7°	75.7°	70.0°	60.0°	0.0°	60.7°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass: A. M.					P. M.				Local mean solar time
	e.	5.0	4.0	3.0	2.0	[1] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Apr. 1	3.15					1.45	1.12	1.03	0.90	0.79	2.62
Apr. 4	2.49	0.87	0.97	1.11	1.30	1.52					2.06
Apr. 6	7.04				1.08	1.34					5.16
Apr. 7	4.75			0.83	1.07	1.34					4.57
Apr. 12	3.15	0.80	0.92	1.09	1.25	1.44					3.00
Apr. 14	3.45		0.74	0.92	1.13	1.31					3.15
Apr. 15	3.15	0.80	0.88	0.97							2.87
Apr. 18	3.63	0.74	0.87	1.04	1.20	1.48	1.13	0.91	0.75		3.15
Apr. 19	4.37	0.62	0.76	0.92	1.12	1.43					4.37
Apr. 22	6.50					1.37	1.16	0.91	0.72	0.65	3.81
Apr. 23	6.76					1.33					4.17
Apr. 27	3.45		0.67	0.86							2.74
Apr. 28	4.37				1.12	1.38	1.18	1.03			3.81
Apr. 29	7.29			0.81	0.98						4.75
Means		0.75	0.83	0.95	1.14	1.40	1.15	0.97	0.79	(0.72)	
Departures		+0.05	+0.05	+0.06	+0.06	+0.04	+0.07	+0.07	+0.05	+0.09	
Madison, Wis.											
Apr. 8	4.57			1.07	1.34	1.50	1.22				4.17
Apr. 11	4.57				1.30						3.15
Apr. 12	2.26				1.27	1.51	1.24				2.26
Apr. 14	2.26		1.05	1.15	1.30	1.57	1.20				2.16

TABLE 1.—*Solar radiation intensities during April, 1932*—Contd.

[Gram calories per minute per square centimeter of normal surface]

Madison, Wis.—Continued

Date	Sun's zenith distance: 8 a.m.	78.7°	75.7°	70.0°	60.0°	0.0°	60.7°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass: A. M.					P. M.				Local mean solar time
	e.	5.0	4.0	3.0	2.0	[1] 1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Apr. 15	4.57				1.17	1.35					3.45
Apr. 18	3.30				1.09	1.38					2.87
Apr. 22	5.16				0.87						5.16
Apr. 27	3.45			1.11	1.30	1.55					2.36
Apr. 30	7.29				1.21						6.02
Means			(1.05)	1.11	1.21	1.48	1.22				
Departures			+0.12	+0.07	+0.01	+0.05	+0.03				
Lincoln, Nebr.											
Apr. 7	4.95		0.91	1.06	1.25	1.48					3.81
Apr. 8	4.37	0.51	0.63	0.84	1.14						4.75
Apr. 11	3.30	0.86	0.93	1.07	1.25	1.48					3.30
Apr. 12	2.87	0.73	0.84	0.98	1.19	1.50	1.20				2.74
Apr. 14	3.45		0.71	0.83	1.05	1.30					3.81
Apr. 27	3.99				1.23						4.37
Apr. 29	8.81					1.48					4.95
Apr. 30	5.36	0.82	0.90	1.01	1.15	1.38					5.56
Means		0.73	0.82	0.96	1.18	1.44	(1.20)				
Departures		+0.01	−0.01	−0.02	−0.02	+0.00	+0.03				

[1] Extrapolated.

TABLE 2.—*Total solar radiation (direct+diffuse) received on a horizontal surface*

Week beginning	(Gram calories per square centimeter) average daily totals: Washington	Madison	Lincoln	Chicago	New York	Fresno	Pittsburgh	Fairbanks	Twin Falls	La Jolla	Gainesville	Miami	New Orleans
1932	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Apr. 1	532	280	465	296	509	576	389	297	423	442	576	487	375
Apr. 8	295	540	515	438	166	565	183	383	511	467		581	412
Apr. 15	583	493	299	489	530	568	482	414	403	504	448	474	355
Apr. 22	483	407	280	400	479	522	384	417	406	512	611	594	336
	Departures from weekly normals												
Apr. 1	+145	−103	+38	±0	+195	+60	+93		+21	+14	+42	+3	
Apr. 8	−107	+132	+88	+111	−183	+23	−157		+64	+23		+9	
Apr. 15	+155	+93	−126	+167	+147	+15	+126		−68	+54	−102	−1	
Apr. 22	+54	−26	−167	+65	+79	−34	+14		−100	+83	+22	±0	
	Accumulated departures on Apr. 28												
	+1,176	−784	−2,079	−3,871	+3,101	+1,715	+1,225		−1,428	+3,311		+4,032	

TABLE 3.—*Solar radiation measurements, and determinations of atmospheric turbidity factor, β. Washington, D. C., April, 1932*

[Value in italics have been interpolated]

Date and solar hour angle	Solar altitude, h	Air mass, m.	I_m	I_y	I_r	β	Blueness of sky	Atmospheric dust particles per cubic centimeter	Notes (skylight polarization, P=Clouds
Apr. 6	° ′		gr. cal.	gr. cal.	gr. cal.				
4:22 a	23–07	2.54	0.964	*0.730*	0.604	0.108		630	P.=60.6%.
4:17 a	24–03	2.45	1.007	.750	*.616*	.095			
3:44 a	30–16	1.98	1.058	.836	*.690*	.155	5		
3:40 a	31–00	1.94	1.082	*.845*	.692	.145			
2:52 a	39–40	1.57	1.192	.860	*.697*	.117			Stopped by clouds.
2:48 a	40–09	1.55	1.207	*.861*	.697	.110			
Apr. 7									
5:00 a	15–55	3.61	.696	.554	.477	.130		754	P=54.0%.
4:56 a	16–42	3.47	.720	*.564*	.492	.130			
4:32 a	21–32	2.71	.878	*.677*	.566	.125			
4:24 a	23–04	2.55	.938	.701	*.586*	.110			
3:56 a	28–16	2.11	1.043	.776	*.639*	.100			
3:52 a	29–02	2.06	1.051	*.780*	.644	.115	4		
3:17 a	35–28	1.72	1.137	*.832*	.673	.120			
3:11 a	36–31	1.68	1.141	.837	.678	.130			Clouds.
Apr. 12									
4:46 a	19–58	2.91	1.098	*.822*	.685	.065		441	Stopped by clouds.
4:34 a	22–13	2.63	1.141	.851	*.692*	.060			
Apr. 14									
5:14 a	16–17	3.53	.819	*.671*	.563	.115		806	
5:08 a	17–27	3.31	.863	.683	*.572*	.100			
4:42 a	21–06	2.76	.969	.755	*.620*	.100			Do.
4:35 a	22–29	2.60	1.000	*.778*	.639	.080			
Apr. 15									
5:06 a	16–40	3.46	.936	*.737*	.611	.078		974	Stopped by Ci. clouds.
5:02 a	17–32	3.29	.962	.740	*.616*	.075			
Apr. 18									
5:21 a	14–23	3.99	.881	.702	*.615*	.090		344	P=61.6%.
5:03 a	17–54	3.23	1.002	.773	*.647*	.075			
4:59 a	18–40	3.10	1.027	*.783*	.656	.075			
4:32 a	23–55	2.40	1.118	.835	*.683*	.075			
4:28 a	24–47	2.37	1.137	*.853*	.687	.075			
3:44 a	33–06	1.83	1.223	*.903*	.732	.095	5		
3:40 a	33–52	1.79	1.229	.909	*.735*	.095			
3:11 a	39–15	1.58	1.296	*.932*	.752	.092			
3:03 a	40–42	1.53	1.303	.942	*.754*	.095			
2:44 a	44–00	1.44	1.326	*.947*	.757	.095			
2:35 a	45–38	1.40	1.338	.950	*.758*	.090			
2:10 a	49–06	1.32	1.354	*.954*	.740	.080			
0:50 a	59–52	1.15	1.428	.999	*.802*	.095			
2:48 p	43–26	1.46	1.284	*.936*	.743	.105			
2:52 p	42–42	1.48	1.290	.934	*.740*	.100			
Apr. 19									
5:17 a	15–23	3.73	.794	.624	*.528*	.095		546	P=57.9%.
5:12 a	16–21	3.44	.803	*.644*	.534	.105			
4:50 a	20–32	2.83	.948	*.719*	.601	.095			
4:44 a	21–48	2.68	.978	.743	*.614*	.095	5		
Apr. 22									
2:11 a	50–40	1.29	1.249	*.912*	.598	.050		714	P=54.1%
2:07 a	51–18	1.28	1.264	.914	*.603*	.045			
0:34 a	62–20	1.13	1.330	.904	*.727*	.110			
0:30 a	62–34	1.13	1.334	*.912*	.730	.110			
3:06 p	41–04	1.51	1.179	*.875*	.713	.145			
3:10 p	40–20	1.54	1.200	.873	*.711*	.125			
3:56 p	31–46	1.90	1.182	.834	*.672*	.075			
4:00 p	31–02	1.94	1.196	*.819*	.666	.062	4		
4:26 p	25–50	2.28	1.040	*.776*	.628	.095			
4:29 p	25–22	2.33	1.002	.765	*.622*	.105			
4:48 p	21–40	2.70	.978	.711	*.676*	.068			
4:52 p	20–53	2.78	.948	*.700*	.550	.070			
5:09 p	17–35	3.28	.828	*.638*	.524	.090			
5:13 p	16–48	3.43	.820	.617	*.514*	.082			
Apr. 28									
0:06 a	65–18	1.10	1.347	1.025	*.818*	.170		231	P=53.9%.
0:02 a	65–20	1.10	1.354	*1.021*	.811	.170			
1:50 p	55–22	1.21	1.290	.917	*.751*	.150			
1:54 p	54–49	1.22	1.306	*.916*	.750	.140			
2:32 p	48–35	1.33	1.242	*.908*	.716	.140			
2:35 p	48–00	1.34	1.235	.907	*.713*	.145			
3:19 p	39–55	1.56	1.204	*.859*	.673	.095			
3:22 p	39–16	1.58	1.224	.856	*.668*	.075			
4:00 p	32–12	1.88	1.203	.854	*.668*	.065			
4:04 p	31–21	1.92	1.183	*.849*	.663	.068	5		
4:32 p	25–49	2.29	1.140	.778	*.632*	.045			
4:36 p	25–02	2.35	1.118	.770	.619	.050			Stopped by clouds.
4:51 p	22–14	2.63	1.070	------	.624	.060			
Apr. 29									
4:00 a	32–16	1.87	1.003	.772	*.640*	.165	4	1029	P=58.6%.
3:56 a	33–08	1.82	1.035	*.779*	.650	.155			

POSITIONS AND AREAS OF SUN SPOTS

Communicated by Capt. J. F. Hellweg, Superintendent United States Naval Ovservatory. Data furnished by Naval Observatory, in cooperation with Harvard, Yerkes Perkins, and Mount Wilson Observatories. The differences of longitude are measured from central meridian, positive west. The north latitudes are plus. Areas are corrected for foreshortening and are expressed in millionths of sun's visible hemisphere. The total area, including spots and groups, is given for each day in the last column.

Date	Eastern standard civil time	Heliographic			Area		Total area for each day
		Diff. long.	Longitude	Latitude	Spot	Group	
1932	*H m*	°	°	°			
Apr. 1 (Naval Observatory)	10 41	+16.0	115.0	+13.0	77	------	77
Apr. 2 (Naval Observatory)	11 53	+29.5	114.7	+13.0	62	------	62
Apr. 3 (Naval Observatory)	12 22	+58.0	129.7	−10.0	------	108	108
Apr. 4 (Naval Observatory)	11 18	+80.0	139.1	−10.0	------	93	93
Apr. 5 (Naval Observatory)	12 27	No spots			------	------	------
Apr. 6 (Naval Observatory)	10 47	No spots			------	------	------
Apr. 7 (Naval Observatory)	10 46	No spots					
Apr. 8 (Yerkes Observatory)		No spots					
Apr. 9 (Yerkes Observatory)		No spots					
Apr. 10 (Mount Wilson)	18 0	−67.0	269.2	−8.0	------	2	------
		+23.0	359.2	−14.0	------	4	6
Apr. 11 (Yerkes Observatory)		No spots			------	------	------
Apr. 12 (Naval Observatory)	11 45	No spots			------	------	------
Apr. 13 (Naval Observatory)	10 30	No spots			------	------	------
Apr. 14 (Naval Observatory)	10 38	No spots			------	------	------
Apr. 15 (Naval Observatory)	11 4	+0.0	274.0	−18.0	15	------	------
		+3.0	277.0	−16.0	25	------	40
Apr. 16 (Naval Observatory)	10 47	+16.0	277.0	−16.0	15	------	15
Apr. 17 (Naval Observatory)	11 26	+28.0	275.4	−19.0	25	------	------
		+30.0	277.4	−15.0	31	------	56
Apr. 18 (Naval Observatory)	10 29	No spots			------	------	------
Apr. 19 (Naval Observatory)	10 38	No spots			------	------	------
Apr. 20 (Naval Observatory)	10 59	No spots			------	------	------
Apr. 21 (Naval Observatory)	11 52	−50.0	144.3	+9.0	------	154	------
		+60.0	254.3	−8.0	------	216	370
Apr. 22 (Naval Observatory)	10 37	−36.0	145.8	+9.0	------	340	------
		+73.0	254.8	−8.0	------	216	556
Apr. 23 (Naval Observatory)	11 5	−23.0	145.3	+9.0	------	463	463
Apr. 24 (Naval Observatory)	14 12	−8.0	145.4	+9.0	------	463	463
Apr. 25 (Harvard Observatory)	13 27	+5.0	145.7	+9.0	------	908	908
Apr. 26 (Naval Observatory)	11 25	+16.0	144.5	+9.0	------	556	556
Apr. 27 (Naval Observatory)	10 13	+29.0	145.0	+10.0	------	556	556
Apr. 28 (Naval Observatory)	10 29	+42.0	144.6	+10.0	------	617	617
Apr. 29 (Naval Observatory)	10 11	+56.0	145.5	+10.0	------	432	432
Apr. 30 (Naval Observatory)	11 38	+70.0	145.5	+10.0	------	401	401
Mean daily area for April							193

PROVISIONAL SUN-SPOT RELATIVE NUMBERS FOR APRIL, 1932 [1]

[Data furnished through the courtesy of Prof. W. Brunner, University of Zurich, Switzerland]

April, 1932	Relative numbers	April, 1932	Relative numbers	April, 1932	Relative numbers
1	8	11	0	21	*WEcc* 18
2	8	12	0	22	34
2	16	13	0	23	29
4	9	14	0	24	------
5	0	15	8	25	*b* 31
6	0	16	8	26	31
7	0	17	9	27	32
8	0	18	8	28	27
9	0	19	0	29	24
10	0	20	0	30	14

Mean: 29 days 10.8.

[1] Dependent alone on observations at Zurich and its station at Arosa.

a=Passage of an average-sized group through the central meridian.
b=Passage of a large group or spot through the central meridian.
c=New formation of a center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central zone.
d=Entrance of a large or average-sized center of activity on the east limb.

AEROLOGICAL OBSERVATIONS

[The Aerological Division, W. R. GREGG, in charge]

By L. T. SAMUELS

Free-air temperatures during the month averaged decidedly above normal over the Missouri Valley and slightly above over central Texas and the eastern Gulf region. The departures were mostly negative, of moderate magnitude, over the middle Atlantic coast, lower Lake region and southern California. Relative humidity departures were mostly of opposite sign to those of temperatures, pronounced exceptions occurring over the middle Atlantic coast where both elements averaged below normal and over the Missouri Valley where positive departures occurred in both temperature and relative humidity.

The greatest variation from normal at the 1,000-meter level occurred over the Missouri Valley where a pronounced southerly component obtained as compared to a normal west-northwesterly one and over the upper Lakes region where the winds were more northerly than normal. At higher levels the resultant velocities were generally greater than normal with practically normal directions.

Airplane flights were made on every day during the month with one exception at Cleveland. The mean heights reached ranged from 4.942 meters at Cleveland, to 5,756 meters at Omaha. The highest single flight was 6,406 meters at Omaha.

TABLE 1.—*Free-air temperatures and relative humidities during April, 1932*

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Chicago, Ill. (190 meters) [1]		Cleveland, Ohio (245 meters) [1]		Dallas, Tex. (149 meters) [2]		Due West, S. C. (217 meters)		Ellendale, N. Dak. (444 meters)		Hampton Roads, Va. (2 meters) [3]		Omaha, Nebr. (299 meters) [4]		Pensacola, Fla. (2 meters) [3]		San Diego, Calif. (9 meters) [3]		Washington, D. C. (2 meters) [3]	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface	5.0	−5.4	2.6	−7.8	14.8	−2.3	14.6	−1.5	7.8	+2.2	10.7	−1.0	8.2	−1.0	17.3	−0.4	16.0	−1.0	8.1	−3.3
500	5.9	−2.2	3.4	−4.7	16.0	+0.9	13.3	−0.8	7.2	+2.0	9.0	−2.4	8.8	+0.3	16.5	+0.1	13.6	−0.3	7.4	−1.5
1,000	5.4	−0.4	3.3	−2.5	15.5	+2.2	11.0	−0.4	4.2	+1.5	6.8	−2.3	9.4	+3.8	14.5	+0.2	12.9	0.0	5.9	−0.7
1,500	4.2	+0.7	1.6	−1.9	13.7	+1.9	8.1	−0.5	2.9	+2.4			7.8	+4.2						
2,000	2.3	+1.1	−0.1	−1.3	11.6	+2.0	5.7	−0.1	0.9	+3.0	2.5	−1.9	5.6	+4.3	10.7	+0.8	8.1	−1.3	2.3	−1.4
2,500	−0.6	+0.7	−2.0	−0.7	8.7	+1.8	2.8	−0.6	−1.6	+3.3			3.1	+4.4						
3,000	−3.4	+0.4	−4.6	−0.8	5.3	+1.4	−0.2	−0.9	−4.2	+3.7	−0.9	−0.3	0.3	+4.4	5.6	+1.0	1.8	−1.3	−0.9	−2.3
4,000	−9.7	−0.7	−10.1	−1.1	−2.3	+0.1	−6.2	−1.6	−11.4	+2.6			−6.5	+3.7					−5.9	−2.0
5,000	−16.6	−2.0	−17.0	−2.4	−10.0	−1.8							−14.2	+1.9						

RELATIVE HUMIDITY (PER CENT)

Surface	75	+10	82	+17	75	−2	64	+1	71	+6	66	+1	76	+11	78	0	69	+1	64	+3
500	69	+4	76	+11	68	−2	60	−2	72	+8	61	+6	72	+8	70	+1	70	−4	58	0
1,000	60	−2	69	+7	60	−1	55	−5	73	+13	56	+6	64	+2	66	+5	57	−4	54	−2
1,500	52	−8	66	+6	55	+7	52	−7	68	+11			61	+2						
2,000	47	−11	61	+3	46	+3	49	−7	64	+9	55	+9	59	+2	53	+4	40	+3	50	−5
2,500	48	−6	56	+2	41	0	47	−5	63	+9			57	0						
3,000	45	−6	52	+1	39	0	42	−8	59	+5	50	+8	55	−1	47	+6	34	+7	34	−14
4,000	43	−5	46	−2	40	−2	44	−4	48	−8			53	−2					32	−15
5,000	44	−3	44	−3	37	−1							53	+1						

[1] Normals for Royal Center Ind. used.
[2] Normals determined by interpolating between those for Groesbeck, Texas and Broken Arrow, Okla.
[3] Naval air stations.
[4] Normal for Drexel, Nebr. used.

TABLE 2.—*Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (E. S. T.) during April, 1932*

[Wind from North=360°; East=90°; etc.]

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,528 meters)		Bismarck, N. Dak. (518 meters)		Brownsville, Tex. (12 meters)		Burlington Vt. (132 meters)		Cheyenne, Wyo. (1,873 meters)		Chicago, Ill. (198 meters)		Cleveland Ohio (245 meters)		Dallas, Tex. (154 meters)		Due West, S. C. (217 meters)		Havre, Mont. (762 meters)		Jacksonville, Fla. (14 meters)		Key West, Fla. (11 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	45	4.4	65	1.9	143	2.8	253	1.1	310	4.3	41	0.7	256	0.5	170	2.1	317	0.6	250	2.7	290	0.7	66	1.9
500					150	7.1	269	3.3			76	1.7	23	1.2	201	6.4	247	1.8			292	2.2	95	3.7
1,000			131	2.3	167	5.5	294	4.5			354	2.0	321	3.7	225	5.7	266	3.9	260	4.6	282	2.6	101	3.1
1,500			169	2.2	209	2.0	292	5.8			319	3.2	317	6.1	242	4.4	277	5.2	280	5.6	272	3.9	71	1.5
2,000	286	2.7	267	2.6	260	0.9	312	10.1	298	5.8	299	5.3	307	8.7	267	5.2	286	7.0	284	5.6	281	3.7	45	1.0
2,500	288	5.2	317	6.8	223	0.3	310	9.2	288	8.1	285	4.1	311	10.2	286	5.1	292	7.4	258	5.6	316	5.5	341	0.6
3,000	290	8.3	317	8.4	331	1.7	322	13.3	289	7.9			304	10.6	297	6.1	298	9.6	258	5.1	319	6.8	310	3.4
4,000	272	9.8	307	6.4					287	9.8			306	12.3	292	6.5	313	8.5	216	6.5	316	7.1	311	3.8
5,000	280	9.9							293	10.7			311	10.6	289	5.7	292	7.9			293	7.7	301	6.1

TABLE 2.—*Free-air resultant winds (meters per second) based on pilot balloon observations made near 7 a. m. (E. S. T.) during April, 1932*—Continued

Altitude (meters) m. s. l.	Los Angeles, Calif. (217 meters)		Medford, Oreg. (410 meters)		Memphis, Tenn. (85 meters		New Orleans, La. (25 meters)		Oakland, Calif. (8 meters)		Oklahoma City, Okla. (397 meters)		Omaha, Nebr. (299 meters)		Phoenix, Ariz. (356 meters)		Salt Lake City, Utah (1,294 meters)		Sault Ste. Marie, Mich. (198 meters)		Seattle, Wash. (14 meters)		Washington, D. C. (10 meters)	
	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity	Direction	Velocity
	°		°		°		°		°		°		°		°		°		°		°		°	
Surface	309	0.2	248	0.4	161	0.5	98	0.4	342	0.8	184	1.6	104	2.0	100	2.0	170	1.6	30	1.1	172	1.2	291	1.4
500	135	0.6	268	1.0	208	3.9	173	2.1	293	2.7	191	3.2	129	2.9	126	1.4	-----	-----	42	2.9	196	3.0	294	4.4
1,000	331	2.0	255	1.3	238	4.7	194	2.9	307	3.6	233	5.3	176	3.4	282	2.1	-----	-----	14	3.2	200	3.9	293	6.3
1,500	300	2.8	214	2.8	250	4.7	207	2.2	287	3.8	255	5.3	246	3.7	263	2.3	178	2.4	345	4.8	205	4.7	295	9.7
2,000	297	3.4	227	4.9	268	4.9	243	1.6	276	4.5	271	5.5	271	4.8	253	3.5	203	2.2	341	7.6	209	4.9	305	12.4
2,500	293	3.3	230	7.0	273	7.4	303	3.0	256	5.1	270	6.8	284	5.4	231	4.4	247	2.5	332	9.8	210	5.0	301	11.5
3,000	283	5.2	225	8.5	274	9.5	288	3.8	260	5.4	287	5.9	292	9.9	233	6.1	267	5.0	329	9.4	207	6.0	303	11.3
4,000	274	7.0	223	9.9	-----	-----	309	7.5	266	6.1	-----	-----	292	13.1	255	8.0	276	7.0	306	9.6	-----	-----	283	12.3
5,000	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	279	5.2	318	13.3	-----	-----	-----	-----

WEATHER IN THE UNITED STATES

THE WEATHER ELEMENTS

By M. C. BENNETT

GENERAL SUMMARY

The temperature during April was somewhat below the normal from the middle Atlantic area and upper Ohio Valley northward and in the central and southern Plateau and Pacific regions. Elsewhere it was generally above the seasonal average, being but slightly above in the Southern States, while from northern Texas and Arkansas northward to the Canadian border it averaged from 2° to 4° above.

The month as a whole was generally drier than usual throughout the greater part of the country, except the northern Great Plains, the central Rocky Mountain States and the northern half of the Pacific area. The marked feature of the April precipitation was the receipt of generous amounts in the Northwestern States, where moisture had been deficient for a long time, some portions of Montana and the Dakotas receiving nearly 300 per cent of the average April rainfall. The central valleys, the East, and South received generally less than normal; however, heavy amounts were received in limited areas along the west Gulf coast. On the other hand a number of stations in the far Southwest received no rainfall during the entire month.

TEMPERATURE

Periods of low temperature and of high were scattered through the month, most of them being quite brief. In general, the first decade brought more warm weather than cool, and the Missouri Valley was almost constantly warmer than normal. California, the Ohio Valley, and the southern Appalachian region likewise were mainly warm, while in the southern Rocky Mountain region and several parts of the Gulf and Lake regions cool weather predominated.

The middle decade was mainly warmer than normal in the western half of the country, notably the Rocky Mountain region, the northern Plains and the southern Plateau. Low temperatures prevailed in much of the eastern half, especially the Lake region, Ohio Valley, and districts to eastward.

The first half of the last decade was mainly cool from the Rocky Mountains westward, but warm to eastward, particularly in the lower Mississippi Valley and East Gulf States. The latter half of the decade differed from the first half chiefly between the Rocky Mountains and the Mississippi River, where cool weather set in.

In the northeastern portion of the country April resembled March, each averaging colder than normal; in California and adjoining districts a cool April followed a mild March, while in most other regions, a warm April succeeded a cold March.

April was the first month since August, 1931, to average within 4° of normal in every State. The Plains region, Montana, and parts of the lower Mississippi Valley averaged from 2° to 4° warmer than normal. Most of the far Northwest, Utah, the Rocky Mountain and Gulf States, Tennessee, Kentucky, and the upper Mississippi Valley were slightly warmer than normal.

There were small deficiencies in California, most of Nevada, and parts of States adjoining; also the South Atlantic States and the upper Ohio Valley averaged a little cooler than normal. The Lake region and the extreme Northeast averaged considerably below normal, much of New York being 3° or more below.

The highest marks were usually in the eighties in the northernmost States, the Ohio Valley, and the Middle Atlantic States, but elsewhere from 90° to 105°, the last in Arizona. As a rule they occurred during the middle decade between the Pacific coast and the Plains, and during the last decade to eastward.

The lowest readings were below zero in a few North-Central States and some States with lofty mountains; but from the middle and southern Plains eastward they were mostly between 15° and 35°. In the eastern half these lowest readings occurred usually during the first five days or else about the 13th; in the western half the dates were various, but the Rocky Mountain and the middle Plateau States recorded their coldest weather about the 7th.

PRECIPITATION

The north-central portion of the country received a large part of the April precipitation during the opening week and the northeastern portion during the first two weeks. In the far Northwest most of the month's precipitation came during the period from 13th to 22d. To many parts of the country, however, it was the final decade that brought precipitation most abundantly, notably to the Dakotas, the northern and middle Rocky Mountain States, Texas and thence eastward and northeastward to the southern Appalachians and the lower and middle Ohio Valley.

The precipitation of April averaged less than normal in about three-fourths of the States, while in none was it

as much as an inch above normal. It was usually greater than normal in the Dakotas and thence westward to the north Pacific coast, except that northeastern Oregon and portions of adjacent States had less than normal. Much of the middle Plateau region, Colorado, northern New Mexico, and northwestern Texas had more than normal, also most of the west and middle Gulf coast districts, central and northeastern Tennessee and adjoining areas, much of Minnesota and western and northern Wisconsin, and some northern counties of New York and Vermont.

Monthly totals as great as 10 inches were attained in only a very few localities, all in California or Washington.

Arkansas was the State with greatest average deficiency, slightly over 2 inches, the average fall being almost 3 inches. Most of the middle and lower Mississippi Valley fell considerably short of normal, but not in the vicinity of the Gulf coast. Large portions of the central and southern Plains had considerable deficiencies, also central and southern California and most districts to eastward almost to the Rio Grande. Along the Mexican border there was usually no rain or almost none from southeastern California to the one hundredth meridian in Texas.

East of the Mississippi River there was a notable shortage in most of Mississippi, Alabama, western and southern Florida, southern Georgia, and eastern South Carolina, likewise in the upper Ohio Valley, southern New England, and the interior of the Middle Atlantic States, and near the middle and southern portions of Lake Michigan.

SNOWFALL

East of the one hundredth meridian the snowfall was not remarkable for April, save in a very few localities; but at Canton, N. Y., the amount was the greatest in a record extending over 35 years. Usually there was a little more than the average April snowfall at stations near the Canadian boundary from western Maine to Minnesota. As far north as Albany, N. Y., and LaCrosse, Wis., many stations escaped measurable snowfall.

In the States of the far West snowfall usually exceeded the normal, except near the Canadian border and in large parts of the Pacific States. The prospects for liberal flow next summer in streams fed by melting snow are judged to be good in nearly all the far West.

SUNSHINE AND RELATIVE HUMIDITY

Rather abundant sunshine prevailed generally during the month in almost all southern areas, and locally in the central part of the upper Lake region and central New England States. On the other hand the sunshine was deficient in the northern and central Great Plains and westward to the Pacific. Elsewhere it was generally near or slightly above the normal.

The relative humidity was above the normal in the far Northeast, the northern Great Plains, and much of the area westward therefrom to the Pacific. Elsewhere it was generally below the seasonal average, except that along the Gulf coast it was practically normal. The departures from the normal were in most cases small.

SEVERE LOCAL STORMS, APRIL, 1932

[The table herewith contains such data as have been received concerning severe local storms that occurred during the month. A revised list of tornadoes will appear in the Annual Report of the Chief of Bureau]

Place	Date	Time	Width of path (yards)[1]	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Attica and Varysburg, N. Y.	2	10 p. m.				Winds	Barn destroyed; livestock killed; orchards uprooted; telephone lines blown down; considerable minor damage to buildings.	Official, U. S. Weather Bureau.
Canton, N. Y.	2-3					Sleet, glaze and wind.	Overhead wires and trees considerably damaged; electric and power lines affected.	Do.
Lepanto, Ark.	7				$300	Severe wind	One house demolished; 7 persons injured	Do.
Shawnee and Wabaunsee Counties, Kans.	16				8,000	Heavy hail	Character of damage not reported	Do.
Denver (north), Colo.	20		50			Small tornado	Warehouse, windows and roofs damaged; path one city block long.	Do.
Arriba, Colo.	20-21					Wind	Much of spring grain blown out; soil badly drifted in places.	Do.
Pulaski and Massac Counties, Ill.	21	6 a. m.	1.5 mi.		4,300	Hail	Roofs, hotbeds, and gardens damaged	Do.
Grafton, Calif.	21	4 p. m.	1,760			do	15 per cent of cherries and prunes ruined; apples knocked off.	Do.
Glenrock to Midwest, Wyo.	23				7,000	Glaze	Chief damage to telephone wires	Do.
Memphis, Tenn., and vicinity.	24	9-11 p. m.				Wind	Trees uprooted; buildings damaged	Do.
De Kalb, County and vicinity, Ala.	24				1,600	Hail and wind	Some buildings damaged	Do.
Villa Ridge, Ill.	24					Hail	Truck gardens and glass damaged	Do.
Birmingham, Ala.	24-25					Hail and wind	Trees, gardens and auto tops riddled; composition roofs completely ruined.	Do.
Decker, Ind.	25				14,000	Hail	Small animals killed; buildings, autos, gardens, and trees damaged.	Do.
Montgomery, Sumner, Monroe and Maury Counties, Tenn.	25	1:30 a. m.			42,000	Winds and possibly tornado.	Buildings damaged; trees uprooted; 3 persons injured; tornadic characteristics 4 miles north of Nashville.	Do.
Shivers, Miss.	25	6 a. m.				Tornado	No details reported	Do.
Osceola (near), Okla., to Ashport, Tenn.	25	9:30 a. m.	16-33		35,000	do	5 houses demolished, several damaged; 2 cotton gins wrecked; 5 persons injured.	Do.
Locke to Rosemark, Tenn.	25	9:30-10:10 a. m.	100-300	6	100,000	do	Livestock killed; practically all buildings in path wrecked; 28 persons injured; path 16 miles long.	Do.
Champaign, Wabash and Vermilion Counties, Ill.	25	1 p. m.	880			Hail	Heavy damage to truck, fruit, hotbeds, and greenhouses; path 2 miles long.	Do.
Mechanicsburg, Ind.	25	P. m.			300	Tornadic wind	Character of damage not reported	Do.
Tobyhanna, Pa.	26	do				Tornado	Several small buildings wrecked, others damaged.	Do.
Nashville, Ga. (7 miles southeast).	26			3	2,000	do	3 small buildings demolished	Do.
San Diego County, Calif.	26					Hail	Fruit damaged	Do.
Cheyenne to Sherman Hill, Wyo.	27					Glaze	Telephone and telegraph wires broken	Do.
Magnolia, Miss.	29	10:20 a. m.				Tornado	No details reported	Do.
Boonesville, Miss.	29	4:30 p. m.		2		do	do	Do.
Pauls Valley, Okla.	30	8 a. m.	2 mi.		1,500	Hail	Chief damage to crops	Do.
Americus, Ga. (15 miles northwest).	30	3 p. m.				Possibly tornado	Several farm buildings wrecked; valuable cattle killed.	Do.

[1] Mi. signifies miles instead of yards.

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, MONTROSE W. HAYES, in charge]

Rains attending the trough of low pressure which crossed that part of the United States east of the Rocky Mountains from March 29 to April 1 caused floods in the Petit Jean River in Arkansas, the Green River in Kentucky, the Rock and Illinois Rivers in Illinois, the Cahaba River in Alabama, and the James River in Virginia, all of which were mentioned in the MONTHLY WEATHER REVIEW for March, 1932. In addition to the above-mentioned floods this trough of low pressure caused floods in the Hoosick and Chenango Rivers in New York; the Susquehanna River in New York and Pennsylvania; the Coosa, Alabama, Black Warrior, and Tombigbee Rivers in Alabama; the Kiskiminetas River in Pennsylvania; the Pigeon River in Tennessee; and the lower Ohio River. While these overflows were widespread none were serious, but on April 21 and 22 there were severe local floods in western Iowa.

In the following statement of flood damage there are included the losses caused by the flood in the lower Mississippi River in February and March. These reports were received too late to appear in the March issue of the MONTHLY WEATHER REVIEW. The Cairo, Ill., district extends from Cape Girardeau, Mo., to New Madrid, Mo.; the Memphis, Tenn., district from New Madrid, Mo., to the mouth of the White River; and the Vicksburg, Miss., district from the mouth of the White River to Vicksburg.

ATLANTIC SLOPE DRAINAGE

Tangible property totally or partially destroyed:	
Connecticut River (Conn.)	$50
Suspension of business, including wages of employees:	
Connecticut River	600

EAST GULF OF MEXICO DRAINAGE

Tangible property totally or partially destroyed:	
Black Warrior River (Ala.)	5,000
Tombigbee River (Ala.)	300
Pearl River (Miss.-La.)	1,000
Total	6,300
Matured crops: Tombigbee River	200
Prospective crops:	
Tombigbee River	2,400
Chickasawhay River (Miss.)	1,500
Total	3,900
Livestock and other movable property: Tombigbee River	500
Suspension of business, including wages of employees:	
Tombigbee River	7,000
Pearl River	1,000
Total	8,000

MISSISSIPPI SYSTEM

Missouri Basin

Tangible property totally or partially destroyed:	
West Fork of Little Sioux River (Iowa)	68,000
Little Sioux River (Iowa)	36,000
Total	104,000
Matured crops:	
West Fork of Little Sioux River	$3,500
Little Sioux River	4,000
Total	7,500
Prospective crops:	
West Fork of Little Sioux River	27,000
Little Sioux River	9,600
Total	36,600
Livestock and other movable property:	
West Fork of Little Sioux River	5,800
Little Sioux River	4,480
Total	10,280
Suspension of business, including wages of employees:	
West Fork of Little Sioux River	5,100
Little Sioux River	100
Total	5,200

Ohio Basin

Tangible property totally or partially destroyed:	
Ohio River (Ind., Ohio and Ky.)	1,200
Matured crops: Ohio River	2,000
Prospective crops: Ohio River	11,000
Suspension of business, including wages of employees:	
Ohio River	8,870

Lower Mississippi Basin—Mississippi River

Tangible property totally or partially destroyed:	
Cairo district	10,050
Memphis district	30,275
Vicksburg district	12,500
Total	52,825
Matured crops:	
Cairo district	7,000
Memphis district	43,550
Vicksburg district	8,000
Total	58,550
Prospective crops: Cairo district	4,000
Livestock and other movable property:	
Cairo district	2,000
Memphis district	5,375
Total	7,375
Suspension of business, including wages of employees:	
Cairo district	10,000
Memphis district	5,375
Vicksburg	35,000
Total	50,375

The estimated money value of property saved by warnings was as follows:

ATLANTIC SLOPE DRAINAGE

Connecticut River	$121,000
Savannah River	500
Total	121,500

EAST GULF OF MEXICO DRAINAGE

Black Warrior River	5,000
Tombigbee River	26,000
Chickasawhay River	1,000
Total	32,000

MISSISSIPPI SYSTEM

Missouri Basin

West Fork of Little Sioux River	$12,000

Ohio Basin

Ohio River	10,250

Lower Mississippi Basin—Mississippi River

Cairo district	100,500
Memphis district	77,000
Vicksburg district	50,000
Total	227,500

Table of flood stages in April, 1932

[All dates in April unless otherwise specified]

River and station	Flood stage	Above flood stages—dates From—	To—	Crest Stage	Date
ATLANTIC SLOPE DRAINAGE					
Connecticut:	*Feet*			*Feet*	
White River Junction, Vt.	18	12	14	21.2	13
Holyoke, Mass.	9	13	14	9.5	14
Hartford, Conn.	16	10	17	20.5	14
Hoosick: Hoosick Falls, N. Y.	4	1	1	4.1	1
Chenango: Sherburne, N. Y.	8	1	1	8.1	1
		3	4	8.6	3
		9	12	8.3	9
Susquehanna:					
Oneonta, N. Y.	12	1	4	13.3	1
		11	13	12.7	11
Bainbridge, N. Y.	11	1	4	11.9	3
Harrisburg, Pa.	14	2	2	14.3	2
James: Columbia, Va.	10	Mar. 28	3	16.6	Mar. 30
Roanoke: Williamston, N. C.	9	1	9	10.3	6
		14	17	9.3	16
Santee:					
Rimini, S. C.	12	12	16	12.5	15
Ferguson, S. C.	12	15	17	12.0	16, 17
Savannah: Ellenton, S. C.	14	3	5	16.8	3
EAST GULF OF MEXICO DRAINAGE					
Coosa: Gadsden, Ala.	20	2	2	20.0	2
Alabama: Millers Ferry, Ala.	35	4	7	37.8	5
Black Warrior: Lock 10, Tuscaloosa, Ala.	46	1	2	50.5	1
Tombigbee: Lock 4, Demopolis, Ala.	39	1	10	49.8	6
Pearl:					
Edinburg, Miss.	20	3	6	21.8	4
Jackson, Miss.	22	3	13	26.9	8, 9
West Pearl: Pearl River, La.	13	8	11	13.1	10
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Wisconsin: Knowlton, Wis.	12	8	9	13.5	9
Ohio Basin					
Kiskiminetas: Saltsburg, Pa.	8	1	1	8.0	1
Pigeon: Newport, Tenn.	6	1	1	7.5	1
Elk: Fayetteville, Tenn.	14	25	25	14.3	25
Ohio:					
Dam 47, Newburgh, Ind.	35	1	9	38.6	5
Evansville, Ind.	35	1	10	38.8	5
Dam 48, Cypress, Ind.	35	2	9	37.4	6
Mount Vernon, Ind.	35	3	10	37.0	6
Dam 49, Uniontown, Ky.	35	6	9	35.1	7
Shawneetown, Ill.	33	3	12	36.6	7
Dam 50, Fords Ferry, Ky.	32	2	13	36.9	8
Dam 52, Brookport, Ill.	35	4	11	37.0	7
Dam 53, Grand Chain, Ill.	38	4	12	40.6	7
Cairo, Ill.	40	4	12	42.0	9
Arkansas Basin					
Arkansas: Yancopin, Ark.	29	14	21	29.7	18, 19
Lower Mississippi Basin					
Tallahatchie: Swan Lake, Miss.	24	9	19	24.5	12-14
Yazoo: Yazoo City, Miss.	23	Dec. 31	25	31.9	Feb. 21
Ouachita: Monroe, La.	40	Dec. 25	11	49.7	Feb. 2-4
Black: Jonesville, La.	50	Jan. 13	9	55.6	Mar. 5-7
Atchafalaya Basin					
Atchafalaya: Atchafalaya, La.	22	Dec. 27	(1)	24.9	Mar. 3-5
GULF OF CALIFORNIA DRAINAGE					
Colorado: Parker, Ariz.	7	22	30	9.0	27-29

[1] Continued into May.

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, W. F. McDONALD in Charge]

NORTH ATLANTIC OCEAN

By F. A. YOUNG

The pressure situation.—As shown in Table 1 there were no unusually large departures recorded at any of the stations. Both the Atlantic HIGH and Icelandic LOW were fairly well developed during the greater part of the month. The former center of action varied little in intensity, as in Horta there was a difference of only 0.32 inch between the highest and lowest barometric readings. On the other hand, anticyclonic conditions prevailed in the vicinity of Iceland between the 15th and 17th, and again on the 24th and 25th.

At Belle Isle and Halifax there was the usual rapid change in pressure from day to day, while south of Nantucket on the American coast there was less variation.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, April, 1932*

Stations	Average pressure	Departure	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland [1]	30.17	(2)	30.63	17	29.64	25
Reykjavik, Iceland [1]	29.87	+0.07	30.44	[3]16	29.21	13
Lerwick, Shetland Islands [1]	29.60	−0.20	30.29	16	28.63	7
Valencia, Ireland [1]	29.83	−0.06	30.43	12	29.22	3
Lisbon, Portugal [1]	30.09	+0.10	30.45	13	29.59	3
Madeira [1]	30.08	+0.07	30.26	[3]6	29.91	17
Horta, Azores [1]	30.29	+0.14	30.46	2	30.14	[3]16
Belle Isle, Newfoundland [1]	29.92	+0.09	30.42	3	29.12	25
Halifax, Nova Scotia [1]	29.82	−0.11	30.28	30	29.10	17
Nantucket [4]	29.89	−0.08	30.33	5	29.10	12
Hatteras [4]	29.99	−0.02	30.41	4	29.43	11
Bermuda [1]	30.00	−0.09	30.36	30	29.50	22
Turks Island [1]	29.99	−0.03	30.16	15	29.82	22
Key West [4]	29.98	−0.04	30.21	2	29.72	20
New Orleans [4]	30.00	0.00	30.36	2	29.74	10
Cape Gracias, Nicaragua [1]	29.86	−0.11	29.96	13	29.78	[3]18

[1] All data based on a. m. observations only, with departures compiled from best available normals related to time of observations.
[2] No normal available.
[3] And on other date or dates.
[4] Corrected 24-hour mean, based on more than one observation.

Cyclones and gales.—There was a great difference in the weather conditions over the Atlantic during March and April, as the former month was characterized by one unusually severe storm in the first decade and others of more than normal extent and intensity in the second and last decades of the month.

During April, the middle section of the steamer lane was comparatively free from gales, as between the thirtieth and fifty-fifth meridians they were not reported on more than two days in any 5° square. The greatest number of gales occurred in the squares between 40°–45° N. and 55°–60° W. and also between 45°–50° N. and 20°–25° W., where they were reported on five days. Vessels in the region between the coast of Europe and the twentieth meridian encountered disturbances on from two to four days, although few of them could be classed as especially severe. Moderate weather was the rule along the American coast, with the exception of moderate gales in the Gulf of Mexico on the 1st and near Hatteras on the 3d.

As there were but few well-developed disturbances, it was not deemed advisable to publish the usual charts.

An examination of the Northern Hemisphere maps show that on a number of days there were well-developed HIGHS and LOWS over the Atlantic, with fairly steep gradients, accompanied by winds of maximum force not over 7 to 8, which is unusual under these conditions, when strong gales would naturally be expected.

Fog.—Fog occurred as follows over different sections of the ocean: Over the Grand Banks, on from 16 to 17 days; west of the fifty-fifth meridian, between the fortieth and fiftieth parallels, from 3 to 13 days; between the forty-fifth and fiftieth parallels and fortieth and fifty-fifth meridians, from 3 to 8 days; along the American coast, between the thirty-fifth and fortieth parallels, on 5 days; east of the fortieth meridian, on not more than 2 days in any 5° square.

OCEAN GALES AND STORMS, APRIL, 1932

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN			° ′	° ′				*Inches*					
El Occidente, Am. S. S.	Galveston	New York	25 12 N	84 42 W	Apr. 1	Noon, 1	Apr. 1	30.18	N	N, 7	N	N, 8	Steady.
Fred W. Weller, Am. S. S.	Boston	Corpus Christi.	35 00 N	73 26 W	Mar. 31	2a., 1	do	29.81	S	SSW, 9	W	SSW, 10	
Ala., Am. S. S.	Rotterdam	Boston	50 02 N	11 29 W	Apr. 2	Noon, 2	Apr. 4	29.29	NW	NW, 8	NNW	N, 9	WNW–N.
Mopan, Br. S. S.	Kingston	Avonmouth	49 30 N	22 04 W	do	3a., 3	do	29.77	NNW	N, 10	N	N, 10	
Lord Kelvin, Br. S. S.	Falmouth	52° 15′ N., 13° 20′ W.	52 15 N	13 20 W	do	4a., 3	do	29.30	NNW	NW, 7	N	N, 9	NNW–N.
Cyrus Field, Br. S. S.	Halifax	Cable repair	Halifax, N. S.		Apr. 4	8a., 5	Apr. 5	29.80	N	NNW, —	NNW	NNW, 9	NW–NNW.
Amsterdam, Du. tank S. S.	Baytown	Goteborg	59 05 N	8 30 W	Apr. 9	6p., 9	Apr. 9	29.03	WSW	WSW, 7	WSW	WSW, 9	Steady.
Cold Harbor, Am. S. S.	New York	Glasgow	52 25 N	23 03 W	do	8a., 9	Apr. 11	29.80	NW	—, 7	NNW	NW, 8	
Lord Kelvin, Br. S. S.	Falmouth	52° 15′ N., 13° 20′ W.	50 23 N	7 30 W	Apr. 6	4p., 10	Apr. 12	29.49	W	W, 7	WNW	WNW, 9	W–NW.
Tripp, Am. S. S.	Galveston	Bremen	48 55 N	23 06 W	Apr. 10	1a., 10	Apr. 11	30.14	NW	NW, 9	NNW	NW, 10	Steady.
Cyrus Field, Br. S. S.	Halifax	Cable repair	Halifax, N. S.		Apr. 12	6p., 12	Apr. 12	29.56	ESE	ESE, —	SE	ESE, 9	E–SE.
Silverpine, Br. M. S.	Marseille	New York	38 56 N	60 30 W	do	Mdt. 12	Apr. 13	29.70	S	SSE, 9	S	SSE, 10	Steady.
Frederik VIII, Dan. S. S.	Oslo	Halifax	54 30 N	26 00 W	Apr. 11	do	do	29.46	SW	SW, 8	W	NW, 9	SW–W–NW.
Waukegan, Am. S. S.	Havre	New York	49 05 N	17 36 W	Apr. 13	Noon, 13	Apr. 14	30.13	W	W, 7	NW	WSW, 9	SW–W.
American Banker, Am. S. S.	London	do	41 23 N	59 59 W	Apr. 16	6p., 16	Apr. 17	29.17	SE	SW, 11	W	SW, 11	SE–S–W–WSW.
Winnebago, Br. S. S.	Manchester	do	42 07 N	53 50 W	do	do	do	29.58	ESE	SE, 10	S	SE, 10	
City of Joliet, Am. S. S.	Hamburg	New Orleans	43 50 N	14 23 W	Apr. 14	4a., 16	Apr. 16	29.91	W	NW, 7	N	NW, 8	NW–N.
Wacosta, Am. S. S.	Pensacola	Bremen	48 40 N	19 20 W	Apr. 15	11a., 16	do	30.08	NW	NNE, 7	NE	NW, 8	NW–N–NE.
Yorba Linda, Am. S. S.	Tampico	Boston	42 09 N	70 10 W	Apr. 17	8a., 17	Apr. 17	29.30	NW	WNW, 9	WNW	—, 9	NW–WNW.
Breedijk, Du. S. S.	Rotterdam	do	42 17 N	54 03 W	Apr. 20	2p., 20	Apr. 22	29.39	SE	WSW, 8	NNW	NW, 9	S–W.
Cold Harbor, Am. S. S.	Cardiff	Baltimore	49 15 N	29 00 W	Apr. 26	8p., 26	Apr. 28	29.68	WNW	—, 7	NW	—, 8	
Exilona, Am. S. S.	Casablanca	New York	41 30 N	59 30 W	Apr. 27	10p., 27	do	29.52	SSW	S, 8	W	S, 8	S–SW–W.
Statendam, Du. S. S.	New York	Rotterdam	47 47 N	24 12 W	do	6a., 28	do	29.56	W	NW, 9	NW	NW, 9	Steady.
Oakman, Am. S. S.	Harburg	New Orleans	44 35 N	19 20 W	do	2a., 28	do	29.80	W	WNW, 7	NW	WNW, 9	W–WNW.
American Banker, Am.	New York	London	48 22 N	21 03 W	do	Noon, 29	Apr. 29	29.56	WNW	NNW, 8	N	NNW, 8	WNW–N
Afoundria, Am. S. S.	Tampa	Liverpool	47 35 N	35 20 W	Apr. 26	—, 30	Apr. 30	29.66	WNW	NW, 8	N	NW, 9	
NORTH PACIFIC OCEAN													
City of Vancouver, Br. S. S.	Shanghai	Vancouver	48 17 N	144 00 W	Mar. 31	2 a., 3	Apr. 3	29.08	WNW	SE, 9	S	SE, 9	Steady.
Do	do	do	48 30 N	130 46 W	Apr. 4	Noon, 4	Apr. 4	29.55	NW	NW, 9	WNW	NW, 9	NW–WNW.
President Jefferson, Am. S. S.	Yokohama	Victoria	49 24 N	133 36 W	Apr. 2	4 a., 4	Apr. 5	29.49	NNW	NW, 8	WSW	NW, 8	
President Taft, Am. S. S.	Victoria	Yokohama	50 17 N	132 05 W	Apr. 3	4 p., 3	Apr. 4	29.23	S	S, 4	NW	N, 9	S–SE–S–E.
Do	do	do	52 11 N	149 06 W	Apr. 4	8 a., 5	Apr. 5	29.15	S	SE, 3	NW	NW, 9	SSE–SE–S.
Soyo Maru, Jap. M. S.	Yokohama	San Francisco	44 52 N	143 25 W	Apr. 5	6 a., 5	Apr. 6	29.56	W	SSW, 5	W	W, 9	SSW–WSW.
Fukuyo Maru, Jap. S. S.	Shiogama	Anacortes	48 20 N	171 52 E	Apr. 7	Mdt., 7	Apr. 8	29.68	SSE	S, 9	W	S, 9	
New York, Am. S. S.	Manila	San Francisco	30 34 N	137 54 E	do	3 a., 8	do	29.59	ESE	SE, 8	WSW	SE, 8	6 pts.
Kiyo Maru, Jap. S. S.	San Francisco	Tokuyama	33 30 N	149 00 E	Apr. 8	8 p., 8	do	29.66	ESE	SW, 8	W	SW, 8	S–SW–W.
Wisconsin, Am. S. S.	Japan	San Francisco	43 31 N	155 50 E	Apr. 9	11 a., 9	Apr. 10	28.96	NE	NE, —	W	W, 8	NE–N.
Fukuyo Maru, Jap. S. S.	Shiogama	Anacortes	49 58 N	170 12 W	do	8 a., 10	Apr. 11	29.15	SSE	W, 6	NNW	NW, 10	
Atagisan Maru, Jap. M. S.	Yokohama	San Francisco	44 51 N	164 29 E	do	8 p., 9	do	28.92	E	SSW, 10	NW	SSW, 10	S–SSW–SW.
Golden Sun, Am. S. S.	Seattle	Yokohama	51 20 N	173 05 W	Apr. 10	4 a., 10	do	29.00	SW	SW, 5	W	NW, 8	SW–W.
Ryoyu Maru, Jap. M. S.	San Francisco	do	46 28 N	175 25 E	do	6 a., 11	do	29.52	SW	WSW, 8	SSW	WSW, 11	WSW–WNW.
Wichita, Am. M. S.	Shanghai	San Pedro	36 01 N	149 33 W	Apr. 11	3 a., 12	Apr. 12	29.88	W	NW, 7	NW	NW, 8	Steady.
Point Salinas, Am. S. S.	San Pedro	New Orleans	15 40 N	95 35 W	Apr. 12	6 a., 12	do	29.95	NE	NNE, 10	NNE	NNE, 10	Do.
Steel Maker, Am. S. S.	Osaka	Honolulu	32 50 N	151 14 E	do	1 p., 13	Apr. 13	29.50	S	SW, 8	W	SW, 9	S–SW.
President Madison, Am. S. S.	Yokohama	Seattle	48 15 N	174 50 E	do	2 a., 14	Apr. 14	29.70	W	W, 5	NW	W, 8	Steady.
Ohioan, Am. S. S.	New York	Los Angeles	15 25 N	94 29 W	Apr. 13	5 a., 13	Apr. 13	29.78	NNW	NNW, 8	N	NNW, 8	NNW–N.
Ryoyu Maru, Jap. M. S.	San Francisco	Yokohama	42 10 N	159 20 E	do	3 a., 14	Apr. 15	29.04	ESE	SW, 9	NW	WSW, 11	S–SW.
Do	do	do	39 04 N	150 00 E	Apr. 17	1 a., 17	Apr. 17	29.68	NW	N, 6	N	NW, 9	SW–NW–N.
New York, Am. S. S.	Manila	San Francisco	43 09 N	163 35 E	Apr. 13	1 p., 14	do	29.27	SE	SW, 8	NW	SE, 9	1 pt.
Uffington Court, Br. S. S.	Japan	Vancouver	43 25 N	159 40 E	do	2 a., 14	Apr. 15	28.97	SE	SSW., —	S	SW, 8	SE–S–SW.
Do	do	do	48 36 N	164 20 W	Apr. 19	11 p., 19	Apr. 20	29.25	N	NNW, —	W	NNW, 8	N–NNW.
Silveray, Br. M. S.	Ternate	San Francisco	35 13 N	178 00 E	do	—, 19	Apr. 21	29.61	NW	WNW, 8	N	NNW, 9	WNW–NNW.
President McKinley, Am. S. S.	Honolulu	Yokohama	34 47 N	156 42 E	Apr. 21	10 a., 22	Apr. 22	29.58	S	SW, 10	W	SW, 10	S–SW.
Kiyo Maru, Jap. S. S.	Tokuyama	Los Angeles	41 08 N	160 39 E	do	6 p., 22	Apr. 23	28.84	SE	S, 6	NW	W, 8	SE–S–NW.
President Cleveland, Am. S. S.	Yokohama	Victoria	42 45 N	156 00 E	Apr. 25	10 a., 25	Apr. 26	29.69	S	S, 7		S, 8	S–SSE.
Do	do	do	50 09 N	169 10 W	Apr. 28	2 p., 28	Apr. 30	29.45	S	SE, 8	SE	SE, 8	S–SE–SW.
Varanger, Nor. M. S.	San Francisco	Yokohama	36 50 N	153 00 W	Apr. 29	8 p., 29	do	29.90	WSW	WSW, 8	W	WSW, 8	WSW–W.

NORTH PACIFIC OCEAN

By WILLIS E. HURD

Atmospheric pressure.—The place of lowest average atmospheric pressure on the North Pacific Ocean during April, 1932, was over the central Aleutian Islands (Dutch Harbor, 29.64 inches). The lowest observed pressure of the month, 28.80 inches, occurred at St. Paul, Pribilof Islands, on the 4th. Fewer anticyclones than usual appeared in the Bering Sea, the adjoining Pacific, and in lower Alaskan waters, and pressure was below the average for the month from Dutch Harbor along the eastward and southward coasts to Tatoosh Island, and on the west coast of Mexico.

Over the lower latitudes of the Pacific, as indicated by reports from Honolulu, Midway Island, Guam, and the islands south of Japan proper, pressure was slightly above the normal. The North Pacific anticyclone was for the greater part of April well developed, and except for a few breaks in its continuity from intruding LOWS, mainly from the northward, covered a wide region from the California coast westward into far eastern longitudes.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean and adjacent waters, April, 1932, at selected stations*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow [1] [2]	30.19	+0.10	30.62	[3] 7	29.68	1
Dutch Harbor [1]	29.64	−0.14	30.22	7	29.02	10
St. Paul [1]	29.67	−0.12	30.18	7	28.80	4
Kodiak [1]	29.67	−0.08	30.24	29	29.04	22
Juneau [4]	29.87	−0.09	30.19	28	29.34	2
Tatoosh Island [4] [5]	29.95	−0.05	30.42	8	29.46	4
San Francisco [4] [5]	30.05	0.00	30.25	8	29.74	20
Mazatlan [1] [2]	29.86	−0.10	29.96	3	29.74	19
Honolulu [4]	30.07	+0.01	30.19	4	29.93	29
Midway Island [1]	30.18	+0.06	30.36	[3] 1	29.92	[3] 18
Guam [1]	29.91	+0.02	30.00	16	29.82	[3] 4
Manila [1]	29.87	−0.03	29.94	17	29.80	4
Naha [1]	29.96	+0.04	30.16	25	29.78	[3] 4
Chichishima [1] [2]	30.01	+0.04	30.18	26	29.80	14
Nemuro [1] [2]	29.85	----------	30.42	17	29.40	5

[1] Data based on 1 daily observation only, with departures computed from best available normals related to time of observation.
[2] Data missing for 1 to 5 days.
[3] And on other date or dates.
[4] A. m. and p. m. observations.
[5] Corrected to 24-hour mean.

Cyclones and gales.—The North Pacific was less subject to severe and widespread storms in April than during any other month since October, 1931, and to the eastward of longitude 180° the only gale of force higher than 9 reported north of the Tropics was a whole gale (force 10) which occurred on the night of the 10th–11th near 50° N., 170° W.

Throughout the Aleutian region LOWS followed each other in rapid succession, some of considerable depth, as in the Bering Sea cyclone of the 4th, when the barometer at St. Paul fell to 28.80 inches, and in the cyclone south of the Peninsula of Alaska on the 20th, with lowest reported pressure, 28.88. The latter storm originated near mid-ocean, where it caused strong northwesterly gales on the 19th in the neighborhood of 35° N., 180°. By noon of the 20th it had advanced to lower Alaskan waters, and on that day and the 21st gave fresh to strong gales over a considerable extent of the northern steamship routes from two to four days out of Seattle.

On the 3d and 4th a moderately deep LOW, secondary to a principal disturbance central over the upper Gulf of Alaska, formed west of the British Columbia and Washington coasts and gave rise to fresh to strong gales north of the forty-fifth parallel, between longitudes 130° and 140° W. Strong gales also occurred in the same latitudes, between 140° and 150° W., on the 5th.

On the 11th and 12th the Aleutian cyclone extended far southward and caused fresh gales on the 12th midway along the Washington-Hawaiian routes. Another extension as a shallow depression far into lower latitudes occurred near the end of the month, but without attendant gales.

As is usually the case, conditions over the western part of the ocean were stormier than over the eastern part. Here the deepening cyclones that originated over the Asiatic continent or in the Yellow and Japan Seas, as well as the LOWS peculiar to the western Aleutians, contributed to produce disturbed weather between the outposts of the Aleutians and Japan. On several days during the early half of April, heavy snowstorms, in some instances accompanied by gales, occurred to the northward of the forty-fifth parallel. The severest gales of the month were experienced west of the date line. On the 10th, near 46° N., 173° E., and on the 14th, near 42° N., 158° E., westerly winds of force 11 were reported, both by the Japanese motorship *Ryoyu Maru*, en route from San Francisco to Yokohama. Other high winds of this general region, some of which were of whole gale force, accompanied by greatly depressed barometer, are sufficiently indicated in the adjoining table.

The Jolo typhoon.—Only one tropical cyclone is known to have occurred on the North Pacific in April this year, and information concerning the storm has thus far been obtainable only through press reports. Low pressure overspread the southern Philippines near the end of the month, and on the 29th a destructive typhoon ravaged Jolo and neighboring small islands. Only three buildings in the town of Jolo escaped damage, and among those razed was the historic Chinese pier, one of the most famous markets in the Philippines. Reports say that 140,000 persons were affected; 100 lost their lives, and at least 50 per cent of the corn and rice crops was ruined. It was the first serious typhoon there since 1904. Early in May it was reported that a disastrous storm—presumably a continuation of the Jolo typhoon—struck the coast of Anam, inflicting considerable loss ot life and property.

Tehuantepecers.—In the Mexican tropics an unusual number of northers for April occurred in the Gulf of Tehuantepec, resulting from anticyclones in the Gulf of Mexico or farther northward. They were reported as of moderate gale force on the 1st and 4th; of fresh to strong gale force on the 12th and 13th, and of force 10 on the 15th. On the last date, also, a fresh northeasterly gale was encountered off the middle Costa Rican coast.

Winds at Honolulu.—The trade winds blew 94 per cent of the month at Honolulu, with the prevailing direction from the east. The maximum velocity was 30 miles an hour from the northeast on the 1st.

Fog.—Fog occurred less frequently over the eastern half of the ocean than during previous months of the year. It was not only rare and widely scattered along the northern sailing routes, but was unusually little in evidence along the central California coast. The spots of greatest frequency, each with five days on which fog was noted, lay over extreme southern California and to the south and west of Cape San Lucas. With the return of spring, fog began to appear along the upper and central routes in east longitudes, although up to the end of April it had not yet assumed any considerable navigational importance.

SEA-SURFACE TEMPERATURE OBSERVATION, APRIL, 1932

By GILES SLOCUM

Table 1 shows the average surface temperatures of the Caribbean Sea and the Straits of Florida for April, 1932. These figures are based upon about 80 per cent of the observations which will eventually become available. They are, therefore, preliminary, rather than final values. The final revised figures, computed from complete data, will be given at a later date.

CARIBBEAN SEA

Surface temperatures in the Caribbean Sea were somewhat closer to the seasonal average in April, 1932, than they were during March. They were, however, higher than normal.

STRAITS OF FLORIDA

Until late in the month, the surface temperatures in the Straits of Florida were in general lower than they had been in March. Then, during the final days of April, they rose sharply to normal values. The month as a whole was a period of unusually low temperature for this time of the year.

TABLE 1.—*Preliminary mean sea-surface temperatures (°F.) in the Caribbean Sea and Straits of Florida, April, 1932*

Quarter	Period	Caribbean Sea			Straits of Florida		
		Mean (°F.)	Departure from 13-year mean (1920-1932)	Change from preceding month	Mean (°F.)	Departure from 13-year mean (1920-1932)	Change from preceding month
I	Apr. 1-7	79.6	+0.5		74.6	−1.3	
II	Apr. 8-15	79.5	+0.2		75.3	−1.4	
III	Apr. 16-22	79.9	+0.4		75.5	−1.2	
IV	Apr. 23-30	80.7	+0.8		72.1	−0.3	
	Month	79.9	+0.4	+0.5	75.6	−1.1	−0.1

CLIMATOLOGICAL TABLES [1]

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Condensed climatological summary of temperature and precipitation by sections, April, 1932

[For description of tables and charts, see REVIEW, January, p. 37]

Section	Temperature								Precipitation					
	Section average	Departure from the normal	Monthly extremes						Section average	Departure from the normal	Greatest monthly		Least monthly	
			Station	Highest	Date	Station	Lowest	Date			Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	64.8	+1.2	Thomasville	93	24	2 stations	30	1	3.02	−1.25	Tuscumbia	9.26	Union Springs	0.14
Arizona	59.8	−0.1	Mohawk	105	13	Fort Valley	7	22	0.40	−0.21	Alpine	2.12	13 stations	0.00
Arkansas	63.7	+2.2	Osceola	92	21	Dutton	28	14	2.85	−2.20	Marked Tree	7.02	Cotter	0.71
California	53.5	−1.7	Westhaven	102	10	Twin Lakes	−3	22	1.54	−0.30	Crescent City	11.55	7 stations	0.00
Colorado	45.3	+1.9	Eads	99	13	Dillon	−14	7	1.79	0.00	Telluride	4.42	Del Norte	T.
Florida	69.7	−0.2	2 stations	95	[1] 24	Hillard	34	2	1.27	−1.42	Cottage Hill	4.33	St. Cloud	0.15
Georgia	64.6	+1.1	do	94	24	Blairsville	28	1	1.74	−1.88	Clayton	4.80	Fargo	0.29
Idaho	45.3	+0.3	3 stations	86	[1] 13	Grays Lake	−5	9	1.83	+0.34	Tripod Mountain	4.10	Challis	0.33
Illinois	53.1	+0.8	Greenville	87	2	Lincoln	21	13	1.85	−1.65	Mount Carmel	5.11	Rushville	0.36
Indiana	51.6	−0.3	Edwardsport	86	22	Salamonia	21	13	2.67	−0.89	Kokomo	5.35	Fowler	0.41
Iowa	50.0	+1.2	Logan	84	9	2 stations	21	[1] 1	1.96	−0.93	Washta	5.65	Humboldt	0.44
Kansas	57.5	+3.4	Atwood	92	22	Tribune	18	11	2.21	−0.48	St. Francis	4.24	Smith Center	0.53
Kentucky	56.4	+0.5	2 stations	86	5	Mount Sterling	25	[1] 1	3.88	−0.15	Franklin	8.33	Prestonburg	2.03
Louisiana	68.1	+1.0	3 stations	92	[1] 20	Robeline	35	12	3.45	−1.24	Burrwood	7.77	Natchitoches	0.60
Maryland-Delaware	50.5	−1.9	Keedysville, Md	84	23	Sines, Md	16	14	2.21	−1.36	Crisfield, Md	4.14	Western Port, Md	0.87
Michigan	40.8	−1.8	Gull Lake	83	22	Wolverine	−10	3	1.51	−1.06	Bad Axe	3.29	St. Joseph	0.12
Minnesota	43.1	+0.5	Campbell	84	21	Big Falls	−10	3	1.94	−0.02	Mankato	3.49	Winona	0.95
Mississippi	66.2	+1.6	Waynesboro	94	24	2 stations	35	1	3.32	−1.49	Belzoni	6.24	Aberdeen	1.15
Missouri	57.6	+2.5	Doniphan	95	21	do	22	[1] 1	2.57	−1.24	Caruthersville	5.79	Canton	1.12
Montana	44.7	+2.1	Frazer	84	14	Hebgen Dam	−1	6	1.74	+0.54	Sentinel Butte Pass	4.50	Loweth	0.46
Nebraska	52.4	+3.4	Culbertson	101	20	Harrison	15	26	2.00	−0.45	Hyannis	5.40	Bloomfield	0.43
Nevada	48.3	−0.6	Logandale	96	12	Zorra Vista Ranch	6	7	0.99	+0.20	Lamoille	2.62	2 stations	T.
New England	42.7	−1.0	7 stations	78	[1] 22	Pittsburg, N. H	1	5	2.53	−0.71	Searsburg Mountain, Vt.	4.86	New Bedford Mass	1.00
New Jersey	48.3	−1.1	5 stations	82	[1] 21	2 stations	18	5	2.71	−0.89	Long Branch	4.69	Phillipsburg	1.16
New Mexico	52.2	+0.8	Carlsbad	95	18	Red River	0	7	0.68	−0.31	Des Moines	2.57	8 stations	0.00
New York	41.7	−2.6	Morrisville	88	29	Stillwater Reservoir	1	4	2.42	−0.55	Eagle Falls	4.70	Binghamton	0.97
North Carolina	57.4	−0.5	Goldsboro	92	25	Mount Mitchell	12	13	2.33	−1.16	Tapoco	6.32	Kinston	0.71
North Dakota	44.1	+2.5	Minot	79	17	Pembina	0	3	2.16	+0.77	Napoleon	6.00	Bottineau	0.38
Ohio	48.5	−1.4	Mount Healthy	88	23	2 stations	19	[1] 4	2.29	−0.93	Lake Milton	5.04	Bellefontaine	0.96
Oklahoma	63.1	+2.9	4 stations	91	[1] 2	Goodwell	21	11	2.33	−1.33	Tishomingo	5.48	Stillwater	0.49
Oregon	46.8	−0.2	Oakridge	90	12	2 stations	6	[1] 3	2.65	+0.66	Seaside	8.48	Madras	0.32
Pennsylvania	47.0	−1.7	2 stations	86	22	do	14	[1] 3	1.71	−1.73	Greenville	3.73	Forest City	0.58
South Carolina	62.1	−0.2	3 stations	92	23	Caesar's Head	28	13	2.05	−1.01	Due West	4.23	Summerville	0.23
South Dakota	49.2	+3.5	2 stations	83	[1] 21	Lead	11	26	2.76	+0.77	Harveys Ranch	7.50	Yankton	0.70
Tennessee	59.8	+1.1	Perryville	92	22	Elkmont	23	13	5.04	+0.58	Worsham	8.64	Embreeville	2.48
Texas	67.2	+1.0	New Braunfels	102	25	Muleshoe	21	11	2.50	−0.66	Austwell	8.31	3 stations	0.00
Utah	47.2	+0.3	St. George	88	16	Manila	7	7	1.49	+0.10	Riverdale	4.82	2 stations	T.
Virginia	53.9	−0.8	Chatham	89	3	Mineral	22	10	2.44	−0.88	Saltville	4.79	Lynchburg	1.01
Washington	48.6	+1.1	Wahluke	90	30	Paradise Inn	18	27	3.48	+0.82	Wynoochee Oxbow	14.90	Wapato	0.09
West Virginia	50.9	−0.6	2 stations	88	7	2 stations	18	4	2.21	−1.37	Kayford	4.42	Piedmont	0.57
Wisconsin	42.3	−1.2	Fond du Lac	82	22	do	5	[1] 2	1.49	−1.04	Laona	3.48	Waukesha	0.21
Wyoming	41.2	+1.4	Dull Center (near)	83	14	Riverside	−9	[1] 6	2.02	+0.41	Knowles	7.59	Archer	0.39
Alaska (March)	19.8	+5.0	2 stations	58	[1] 10	Fort Yukon	−48	1	1.03	−0.80	Ketchikan	12.37	5 stations	0.00
Hawaii	71.0	+0.3	do	90	[1] 7	Kanalohuluhulu	47	[1] 17	9.23	+0.64	Puohakamoa (No. 2)	50.00	2 stations	0.00
Puerto Rico	76.2	+1.2	Coloso	98	26	Guineo Reservoir	42	14	4.42	−0.27	Maricao	10.80	Santa Isabel	0.67

[1] Other dates also.

TABLE 1.—*Climatological data for Weather Bureau stations, April, 1932*

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours.	Pressure: Departure from normal	Temperature of the air: Mean max.+ mean min.	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew-point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with 0.01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
	Ft.	*Ft.*	*Ft.*	*In.*	*In.*	*In.*	° *F.*	° *F.*	°*F.*		°*F.*	° *F.*		°*F.*	° *F.*	° *F.*	° *F.*	%	*In.*	*In.*		*Miles*								*0–10*	*In.*	*In.*
New England							**43.8**	**−0.1**										**69**	**2.03**	**−1.0**										**5.9**		
Eastport	76	67	85	29.76	29.85	−0.08	39.6	+0.6	70	22	46	25	5	33	30	36	32	78	2.49	−0.4	11	9,175	nw.	40	e.	12	5	8	17	7.0	3.9	0.0
Greenville, Me	1,070	6	----	28.69	29.87	------	37.2	------	65	30	46	15	2	28	34	----	----	----	4.25	------	12	5,972	n.	26	------	4	7	1	22	----	7.0	0.0
Portland, Me	103	82	117	29.76	29.88	−.08	44.2	+1.2	74	22	52	28	5	36	28	38	29	58	2.07	−1.3	9	7,485	nw.	34	s.	1	13	7	10	4.7	0.6	0.0
Concord	289	70	79	29.57	29.89	−.10	43.4	0.0	76	30	54	22	5	33	39	----	----	----	2.28	−0.5	5	5,575	nw.	24	nw.	17	13	6	11	4.9	T.	0.0
Burlington	403	11	48	29.48	29.93	−.06	39.5	−3.8	72	30	47	18	5	32	33	----	----	----	2.82	+0.7	14	6,917	nw.	30	s.	3	4	6	20	7.5	6.5	0.0
Northfield	876	12	60	----	29.93	−.06	38.8	−1.5	75	30	49	11	5	29	45	----	----	74	2.21	−0.1	9	6,044	s.	24	sw.	3	5	10	15	6.9	1.8	0.0
Boston	125	106	165	29.76	29.90	−.07	47.4	+1.0	76	29	56	28	5	39	30	41	33	62	1.67	−1.7	6	7,123	nw.	30	sw.	3	11	10	9	5.4	T.	0.0
Nantucket	12	14	90	29.88	29.89	−.08	44.6	+1.2	68	22	51	31	2	38	23	40	36	75	1.27	−1.7	10	11,370	sw.	49	sw.	12	9	8	13	5.8	0.2	0.0
Block Island	26	11	46	29.87	29.90	−.08	44.4	+0.4	67	22	50	30	5	38	25	41	38	80	1.96	−1.6	7	12,246	w.	44	w.	27	7	14	9	5.7	T.	0.0
Providence	160	215	251	29.73	29.90	−.08	47.2	+0.6	76	22	56	28	5	38	30	40	33	60	1.98	−1.2	6	9,506	nw.	41	nw.	17	12	7	11	5.2	T.	0.0
Hartford	159	122	----	29.75	29.93	−.06	46.4	−0.3	76	22	56	27	5	37	31	----	----	----	1.63	−1.7	9	------	nw.	----	------	----	8	8	14	6.0	0.1	0.0
New Haven	106	74	153	29.81	29.93	−.06	46.8	−0.4	75	22	55	29	5	38	35	41	34	65	1.93	−1.6	9	7,242	nw.	31	nw.	17	7	12	11	6.0	T.	0.0
Middle Atlantic States							**50.5**	**−0.9**										**62**	**2.13**	**−0.9**										**5.3**		
Albany	97	107	115	29.83	29.94	−.06	45.0	−1.8	77	22	54	26	5	36	35	39	31	63	2.05	−0.4	10	5,933	w.	26	se.	3	12	7	11	5.4	T.	0.0
Binghamton	871	10	84	29.01	29.96	−.06	43.0	−2.4	73	22	52	24	4	34	39	----	----	----	0.97	−1.5	13	5,713	nw.	24	sw.	30	3	6	21	8.0	1.1	0.0
New York	314	414	454	29.59	29.93	−.07	48.4	−1.0	75	22	57	31	13	40	34	41	32	58	2.69	−0.5	6	12,204	nw.	56	nw.	17	9	13	8	5.8	T.	0.0
Bellefonte	1,050	5	36	28.84	29.95	------	45.0	------	77	22	58	20	4	33	46	39	31	63	1.15	------	9	------	w.	34	sw.	3	9	6	15	6.2	0.6	0.0
Harrisburg	374	94	104	29.55	29.95	−.07	49.4	−1.5	77	22	59	29	4	40	36	42	33	58	1.14	−1.6	6	6,634	nw.	27	sw.	30	11	11	8	5.2	T.	0.0
Philadelphia	114	123	367	29.84	29.97	−.04	52.0	−0.1	79	22	61	33	4	43	34	43	34	55	2.37	−0.7	8	10,292	nw.	42	nw.	3	8	12	10	5.6	T.	0.0
Reading	325	81	103	29.60	29.96	------	49.0	−1.3	80	22	59	30	4	39	34	42	32	54	1.26	−2.0	8	5,950	nw.	23	w.	27	7	14	9	5.4	T.	0.0
Scranton	805	72	103	29.11	29.99	−.02	45.1	−3.0	76	22	55	26	4	35	38	39	32	64	0.59	−2.2	8	6,108	nw.	26	nw.	27	5	12	13	6.2	1.5	0.0
Atlantic City	52	37	172	29.90	29.96	−.04	49.0	+1.2	78	23	56	31	4	41	28	44	38	70	4.31	+1.3	9	12,071	w.	46	ne.	10	12	10	8	5.1	0.0	0.0
Cape May	17	13	49	----	----	------	50.0	+1.6	77	23	59	32	4	41	36	44	39	72	2.63	−0.4	9	------	nw.	----	------	----	3	17	10	----	0.0	0.0
Sandy Hook	22	10	55	29.91	29.93	------	48.1	------	71	22	55	35	4	41	29	42	37	69	2.27	−1.4	9	11,506	nw.	45	n.	17	11	11	8	4.9	T.	0.0
Trenton	190	159	183	29.75	29.95	------	49.2	−0.6	78	22	59	30	4	39	35	42	35	63	2.25	−0.7	7	9,227	nw.	34	nw.	17	8	14	8	5.6	T.	0.0
Baltimore	123	100	215	29.83	29.96	−.05	52.8	−0.8	81	23	62	34	4	43	40	45	36	55	2.15	−1.2	7	8,545	sw.	40	nw.	3	14	8	8	4.8	0.0	0.0
Washington	112	62	85	29.85	29.97	−.05	52.6	−0.7	81	3	63	33	4	42	41	44	34	54	2.12	−1.2	9	6,016	nw.	27	nw.	27	13	10	7	4.5	0.0	0.0
Cape Henry	18	8	54	29.95	29.97	------	54.2	−0.4	86	25	63	35	5	46	34	48	42	69	4.50	+1.2	7	8,786	se.	39	nw.	27	12	11	7	5.0	0.0	0.0
Lynchburg	681	153	188	29.23	29.97	−.05	56.2	−1.1	84	23	68	35	15	44	38	47	38	56	1.01	−1.9	6	5,729	nw.	29	n.	5	15	8	7	4.3	0.0	0.0
Norfolk	91	170	205	29.89	29.99	−.02	56.3	−0.5	84	25	66	38	13	47	32	48	41	64	1.63	−1.6	5	9,240	s.	39	w.	12	14	7	9	4.8	0.0	0.0
Richmond	144	11	52	29.83	29.98	−.04	55.0	−1.6	82	23	67	34	13	43	37	49	45	72	1.69	−1.8	8	6,708	ne.	32	w.	26	16	8	6	4.0	0.0	0.0
Wytheville	2,304	49	55	27.59	29.97	−.06	51.4	−0.6	75	23	62	30	13	40	38	44	37	62	2.65	−0.3	14	5,676	w.	25	w.	2	10	10	10	5.3	0.6	0.0
South Atlantic States							**62.5**	**+0.7**										**64**	**1.97**	**−1.0**										**4.8**		
Asheville	2,253	89	104	27.65	30.00	−.03	55.3	+1.4	80	23	67	33	16	44	42	46	39	62	3.48	+0.5	10	6,363	nw.	30	nw.	11	15	9	6	4.3	0.0	0.0
Charlotte	779	55	62	29.15	29.99	−.04	60.3	+0.5	85	23	71	38	1	50	34	51	43	59	2.05	−1.3	8	4,394	sw.	21	sw.	25	11	8	11	5.0	0.0	0.0
Greensboro	886	6	56	29.04	30.00	------	56.1	------	82	23	69	31	16	44	38	48	42	65	1.81	------	9	6,101	w.	26	w.	12	9	11	10	5.3	0.0	0.0
Hatteras	11	5	50	29.96	29.97	−.04	58.8	−1.0	73	29	65	43	1	52	20	56	51	76	2.32	−1.2	10	9,001	ne.	37	nw.	11	12	10	8	4.7	0.0	0.0
Raleigh	376	103	146	29.58	29.98	−.05	59.5	+0.1	85	23	70	38	1	48	35	49	40	54	2.69	−0.8	6	6,715	sw.	32	w.	25	14	7	9	4.7	0.0	0.0
Wilmington	72	73	106	29.92	30.00	−.03	61.8	−0.2	85	23	71	41	16	52	31	54	49	69	0.91	−1.8	7	7,183	sw.	27	s.	26	17	8	5	3.7	0.0	0.0
Charleston	48	11	92	29.95	30.00	−.03	66.2	+1.7	88	6	74	48	1	58	28	58	53	69	0.31	−2.2	6	8,138	sw.	30	e.	4	10	10	10	5.0	0.0	0.0
Columbia, S. C	351	41	57	29.61	29.99	−.04	63.6	+0.3	87	24	75	41	13	52	33	53	45	57	1.95	−0.9	8	5,498	sw.	23	sw.	25	13	8	9	4.7	0.0	0.0
Due West	711	10	55	29.25	30.02	------	60.6	------	85	23	72	36	1	49	33	----	----	----	4.23	------	10	6,655	sw.	31	nw.	24	8	10	12	5.8	0.0	0.0
Greenville, S. C	1,039	139	146	28.89	29.98	------	61.3	+2.7	84	6	71	40	1	52	30	51	44	60	2.68	−1.0	9	6,646	ne.	34	w.	12	8	10	12	5.5	0.0	0.0
Augusta	182	62	77	29.78	29.97	−.06	65.2	+1.0	89	24	78	42	1	53	34	54	46	59	0.74	−2.4	8	4,128	nw.	25	nw.	23	10	13	7	4.8	0.0	0.0
Savannah	65	150	194	29.92	29.99	−.04	67.2	+1.2	89	24	78	48	1	57	29	57	52	68	1.31	−1.3	6	9,157	w.	32	sw.	11	14	9	7	4.5	0.0	0.0
Jacksonville	43	209	245	29.96	30.01	−.03	68.7	0.0	87	26	77	48	2	60	26	59	53	67	3.20	+0.8	6	8,542	s.	37	s.	11	12	12	6	4.3	0.0	0.0
Florida Peninsula							**72.9**	**−0.3**										**72**	**1.39**	**−0.7**										**3.0**		
Key West	22	10	64	29.96	29.98	−.04	75.	−0.7	85	30	81	62	14	69	19	68	65	73	0.93	−0.4	5	7,337	e.	24	nw.	11	16	10	4	3.5	0.0	0.0
Miami	25	124	168	29.98	30.01	−.02	72.6	−0.2	85	27	79	52	13	66	22	65	62	71	2.48	−0.6	8	7,811	se.	29	nw.	11	11	12	7	4.8	0.0	0.0
Tampa	35	86	197	29.97	30.01	−.05	71.0	+0.1	88	27	80	51	2	62	26	63	59	73	0.76	−1.2	6	8,234	e.	26	e.	29	14	11	5	4.1	0.0	0.0
Titusville	44	5	----	29.95	30.00	------	70.7	------	88	24	81	50	13	60	32	----	----	----	0.52	------	5	------	se.	----	------	----	20	8	2	3.3	0.0	0.0
East Gulf States							**66.1**	**+1.4**										**66**	**2.75**	**−1.4**										**4.8**		
Atlanta	1,173	190	198	28.77	30.00	−.03	61.9	+0.9	82	24	71	39	1	52	27	53	45	60	3.17	−0.4	9	7,518	w.	36	nw.	25	11	11	8	5.2	0.0	0.0
Macon	370	78	87	29.60	30.00	−.03	65.1	+1.2	89	24	77	39	16	53	37	54	45	55	0.74	−2.4	8	5,244	nw.	22	nw.	12	11	9	10	5.1	0.0	0.0
Thomasville	273	49	103	29.72	30.01	−.02	67.9	+1.2	86	23	79	45	2	57	31	58	52	65	0.51	−2.8	6	6,211	sw.	25	sw.	8	12	4	14	5.4	0.0	0.0
Apalachicola	36	11	51	29.97	30.01	------	67.2	------	85	22	75	50	12	60	22	62	58	76	2.18	−0.6	3	6,587	nw.	32	e.	30	15	8	7	4.2	0.0	0.0
Pensacola	56	149	185	29.95	30.01	−.01	67.2	+0.5	84	22	73	48	1	61	20	61	58	76	2.52	−1.5	3	8,966	w.	43	sw.	30	14	10	6	4.0	0.0	0.0
Anniston	741	9	57	----	----	------	62.8	+2.4	86	24	75	34	1	51	35	----	----	----	3.48	------	8	4,219	se.	19	w.	25	12	8	10	----	0.0	0.0
Birmingham	700	11	48	29.24	30.00	−.02	64.8	+1.5	88	22	76	38	1	54	34	54	47	61	3.45	−1.4	9	5,603	sw.	25	nw.	25	13	8	9	4.6	0.0	0.0
Mobile	57	125	161	29.94	30.00	−.02	68.0	+1.7	88	26	77	46	1	59	27	60	57	75	3.76	−0.9	4	6,811	sw.	29	sw.	30	14	8	8	4.5	0.0	0.0
Montgomery	223	100	112	29.75	30.00	−.03	66.4	+1.1	89	24	77	44	1	56	29	56	49	59	2.86	−1.4	5	5,478	sw.	27	nw.	25	12	9	9	4.8	0.0	0.0
Corinth	469	6	----	----	----	------	64.6	------	92	21	78	38	1	52	39	----	----	----	3.94	------	9	------	se.	----	------	----	9	16	5	----	0.0	0.0
Meridian	375	87	95	29.59	29.99	−.03	66.1	+2.1	89	23	78	40	1	55	32	56	50	63	2.96	−1.8	7	4,793	sw.	26	sw.	25	13	9	8	4.4	0.0	0.0
Vicksburg	247	65	73	29.73	30.01	+.01	67.2	+1.6	87	20	77	47	1	58	29	58	52	65	2.21	−3.0	6	5,582	s.	19	w.	7	12	6	12	5.1	0.0	0.0
New Orleans	53	76	84	29.95	30.00	.00	69.9	+1.1	88	23	79	51	1	61	23	62	57	70	5.88	+0.6	5	5,035	se.	18	e.	27	8	14	8	5.3	0.0	0.0
West Gulf States							**68.1**	**+1.6**										**67**	**3.03**	**−0.6**										**4.8**		
Shreveport	249	204	220	29.70	29.96	−.01	67.7	+1.9	86	20	77	50	12	58	28	58	51	63	2.61	−2.0	6	8,251	s.	30	s.	24	13	9	8	4.3	0.0	0.0
Bentonville	1,303	11	44	28.55	29.90	−.06	61.2	+4.3	82	20	71	40	9	51	32	----	----	----	2.09	------	7	5,712	s.	32	sw.	2	18	7	5	----	0.0	0.0
Fort Smith	457	79	94	29.44	29.92	−.04	65.0	+3.2	87	20	75	44	12	55	34	54	46	56	1.77	−2.2	8	6,852	e.	31	w.	24	11	11	8	5.2	0.0	0.0
Little Rock	357	136	153	29.58	29.96	−.02	65.4	+3.3	87	20	75	47	27	56	34	55	46	56	1.70	−3.5	6	7,090	sw.	32	sw.	2	10	9	11	5.4	0.0	0.0
Austin	605	136	148	29.29	29.92	------	69.4	+1.6	90	26	80	39	12	58	43	59	52	63	2.34	−2.0	4	7,293	se.	32	nw.	9	12	10	8	4.8	0.0	0.0
Brownsville	57	83	100	29.85	29.91	------	73.3	−0.4	91	23	81	50	1	66	30	66	63	79	6.59	+5.2	6	8,633	se.	32	n.	27	8	14	8	5.4	0.0	0.0
Corpus Christi	20	11	78	29.92	29.94	−.01	71.0	+0.2	87	30	77	48	12	65	25	65	62	81	2.42	+0.6	5	9,406	se.	32	se.	22	10	9	11	5.6	0.0	0.0
Dallas	512	220	227	29.38	29.92	------	67.0	------	86	13	77	41	11	58	36	----	----	----	2.45	−1.8	7	10,215	se.	53	sw.	9	14	6	10	4.2	0.0	0.0
Fort Worth	670	106	114	29.20	29.90	−.04	67.4	+2.4	88	13	78	41	12	57	42	57	50	61	3.43	−0.6	7	7,923	s.	34	nw.	9	13	6	11	4.9	0.0	0.0
Galveston	54	106	114	29.89	29.95	−.02	69.0	+0.3	80	30	73	48	11	65	18	64	62	83	2.17	−0.9	4	6,979	se.	32	nw.	10	13	10	7	4.3	0.0	0.0
Houston	138	292	314	29.83	29.98	------	69.6	+0.3	90	25	78	46	11	61	28	----	----	----	2.56	−1.0	4	8,756	se.	35	nw.	10	9	13	8	5.1	0.0	0.0
Palestine	510	64	72	29.43	29.96	.00	67.2	+1.2	85	20	77	43	11	57	34	58	52	65	1.83	−2.6	5	6,789	s.	25	nw.	10	12	11	7	4.5	0.0	0.0
Port Arthur	34	58	66	29.94	29.98	------	69.6	------	87	26	77	47	11	62	27	----	----	----	7.02	+4.0	4	6,708	s.	26	n.	29	12	14	4	4.3	0.0	0.0
San Antonio	693	242	301	29.20	29.91	−.02	70.4	+1.3	92	25	81	50	11	60	34	61	54	66	2.61	−0.6	7	9,474	se.	35	nw.	10	9	14	7	4.9	0.0	0.0
Taylor	571	38	51	29.37	29.97	+.02	68.6	+1.1	89	26	80	40	12	57	42	----	----	----	2.94	−0.8	5	7,746	s.	30	nw.	10	10	13	7	4.7	0.0	0.0

TABLE 1.—*Climatological data for Weather Burrau stations, April, 1932*—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max. K mean min. K2	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with .01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
Ohio Valley and Tennessee	*Ft.*	*Ft.*	*Ft.*	*In.*	*In.*	*In.*	*°F.*	*°F.*	*°F.*		*°F.*	*°F.*		*°F.*	*°F.*	*°F.*	*°F.*	*%*	*In.*	*In.*		*Miles*								*0–10*	*In.*	*In.*
							54.7	0.0										62	2.82	−0.8										5.7		
Chattanooga	762	190	215	29.20	30.01	−.02	61.4	+1.1	83	6	72	37	1	51	29	51	42	54	3.53	−1.3	8	6,072	sw.	32	sw.	25	11	6	13	5.6	0.0	0.0
Knoxville	995	102	111	28.94	29.99	−.04	59.6	+1.6	82	6	70	36	1	49	32	50	42	60	5.47	+1.3	8	5,390	sw.	29	sw.	2	8	10	12	5.6	0.0	0.0
Memphis	399	78	86	29.54	29.96	−.04	64.2	+2.4	85	21	73	43	27	55	27	56	49	62	2.53	−2.2	8	6,210	sw.	36	w.	24	11	13	6	5.0	0.0	0.0
Nashville	546	168	191	29.42	30.01	.00	59.7	+0.7	81	5	69	37	1	50	34	52	45	64	7.20	+3.1	9	6,916	nw.	38	s.	25	9	4	17	6.1	0.0	0.0
Lexington	989	193	230	28.94	30.02	.00	53.9	+0.4	78	23	63	31	13	45	37	----	----	----	3.32	−0.2	13	9,027	e.	44	sw.	2	13	9	8	4.8	T.	0.0
Louisville	525	188	234	29.42	30.00	−.01	55.6	−0.8	79	5	65	34	13	46	37	48	41	64	3.39	−0.5	15	7,783	n.	42	sw.	2	8	8	14	6.1	0.0	0.0
Evansville	431	76	116	29.52	29.99	−.01	57.4	+0.7	81	22	66	36	13	48	28	49	42	63	2.55	−1.4	9	7,230	e.	38	sw.	2	9	9	12	6.0	0.0	0.0
Indianapolis	822	194	230	29.10	29.99	−.01	51.6	−0.5	78	22	61	29	13	42	30	44	37	64	2.77	−0.8	10	8,320	nw.	32	w.	25	9	10	11	6.0	0.8	0.0
Royal Center	736	11	55	29.20	30.01	------	47.6	------	78	2	59	26	14	36	40	----	----	----	2.46	−0.6	9	8,654	e.	33	w.	2	9	6	15	6.0	T.	0.0
Terre Haute	575	96	129	29.36	29.98	------	54.2	------	82	2	64	31	13	45	37	46	39	61	1.44	−2.2	13	7,309	nw.	33	sw.	2	9	10	11	5.8	T.	0.0
Cincinnati	627	11	51	29.31	30.00	−.01	52.6	+0.2	79	2	64	30	13	42	33	45	38	65	1.80	−1.3	12	6,208	ne.	36	sw.	2	10	5	15	6.0	T.	0.0
Columbus	822	216	230	29.11	29.99	−.03	50.0	−1.2	78	20	60	27	4	39	32	42	35	62	1.75	−1.1	9	8,550	ne.	41	sw.	2	9	8	13	5.8	T.	0.0
Dayton	899	137	173	29.03	29.99	------	51.0	−0.6	78	22	62	29	4	40	35	43	36	62	1.47	−1.7	8	6,916	ne.	38	sw.	2	9	15	6	5.2	T.	0.0
Elkins	1,947	59	67	27.94	30.01	−.02	47.8	−1.0	76	29	60	22	17	35	45	41	34	64	2.58	−1.0	10	5,239	nw.	24	w.	2	8	10	12	6.1	1.4	0.0
Parkersburg	637	77	82	29.34	30.00	−.03	52.0	−1.4	80	2	64	28	15	40	39	44	36	62	1.69	−1.5	8	5,076	nw.	27	nw.	12	12	7	11	5.3	T.	0.0
Pittsburgh	842	353	410	29.07	29.99	−.03	48.9	−2.3	78	22	60	25	13	38	39	41	32	58	1.16	−1.8	9	7,798	w.	34	w.	12	8	10	12	6.2	2.5	0.0
Lower Lake Region							42.8	−2.6										67	2.31	−0.2										5.3		
Buffalo	767	243	280	29.12	29.96	−.05	39.8	−3.0	70	29	46	23	13	33	29	35	30	71	2.52	0.0	13	10,592	nw.	43	sw.	12	8	7	15	6.5	5.5	0.0
Canton	448	10	61	29.44	29.92	------	37.6	−4.9	71	22	46	14	4	30	31	----	----	----	4.50	+2.3	14	6,436	w.	29	e.	2	5	6	19	7.0	15.6	0.0
Ithaca	836	74	100	29.03	29.95	------	42.8	−2.2	73	29	52	23	4	34	37	37	31	65	1.36	−1.2	11	7,993	nw.	32	s.	30	6	6	18	7.2	7.5	0.0
Oswego	335	71	85	29.58	29.96	−.05	40.0	−3.6	71	30	46	24	4	34	28	36	30	69	2.46	+0.1	13	7,913	w.	25	nw.	27	6	6	18	7.1	6.1	0.0
Rochester	523	86	102	29.40	29.98	−.03	41.4	−3.5	73	22	49	25	13	34	38	36	30	67	2.54	+0.2	14	6,908	w.	30	sw.	12	7	8	15	6.5	6.1	0.0
Syracuse	596	65	79	29.31	29.96	−.05	43.2	−1.2	74	30	51	23	4	36	35	----	----	----	1.70	−0.8	13	6,128	w.	25	nw.	27	8	5	17	6.7	2.2	0.0
Erie	714	130	166	29.20	29.98	−.04	42.8	−2.3	71	22	50	25	12	35	30	38	33	72	2.24	−0.5	11	9,133	w.	37	se.	5	14	2	14	5.7	5.3	0.0
Cleveland	762	267	337	29.15	29.98	−.04	44.0	−2.2	74	2	52	25	4	36	36	38	32	64	2.09	−0.4	10	10,142	n.	46	s.	2	9	8	13	6.4	1.7	0.0
Sandusky	629	5	67	29.31	30.00	−.02	44.8	−2.4	75	2	52	26	12	37	34	----	----	----	2.52	0.0	11	7,538	e.	29	sw.	2	8	7	15	6.3	3.8	0.0
Toledo	628	208	243	29.32	30.01	.00	45.0	−2.6	73	2	54	27	17	36	32	39	31	62	1.48	−1.2	11	9,349	e.	39	sw.	2	13	6	11	5.0	0.6	0.0
Fort Wayne	856	100	119	29.07	30.00	------	47.4	−1.9	75	22	58	27	4	37	38	41	34	66	2.21	−0.9	11	8,134	ne.	31	nw.	11	8	9	13	5.8	T.	0.0
Detroit	730	218	258	29.21	30.02	.00	44.3	−1.9	73	22	53	25	4	35	27	38	32	68	2.08	−0.4	9	7,695	nw.	24	sw.	1	12	9	9	4.9	2.1	0.0
Upper Lake Region							40.5	−1.0										66	1.57	−0.9										5.5		
Alpena	609	13	89	29.36	30.04	+.02	37.6	−1.0	69	22	46	12	4	30	31	33	26	66	2.11	−0.1	10	8,759	nw.	32	se.	7	12	7	11	5.1	7.8	0.0
Escanaba	612	54	60	29.40	30.09	+.07	37.8	−0.1	68	22	46	14	2	30	28	32	26	67	2.89	+0.7	10	7,591	n.	34	n.	12	12	6	12	5.4	4.8	0.0
Grand Haven	632	54	89	29.33	30.02	+.01	42.7	−1.0	73	21	52	24	3	34	31	37	30	66	0.82	−1.8	8	8,339	e.	27	nw.	12	10	7	13	5.7	T.	0.0
Grand Rapids	707	70	244	29.24	30.02	.00	45.0	−2.0	78	22	55	23	3	35	33	37	29	58	0.98	−1.8	9	9,059	e.	35	sw.	30	11	5	14	5.9	0.3	0.0
Houghton	668	64	99	29.35	30.09	+.07	36.2	−1.5	65	21	44	17	2	28	34	----	----	----	1.54	−0.7	8	7,192	e.	26	nw.	12	10	8	12	5.4	3.2	0.0
Lansing	878	6	88	29.05	30.01	------	42.6	−3.0	73	22	53	23	3	32	38	38	32	71	2.18	−0.4	12	7,464	ne.	24	nw.	11	10	9	11	5.5	2.2	0.0
Ludington	637	60	66	29.32	30.03	------	41.6	−0.3	71	21	50	21	2	34	29	36	29	67	1.07	−1.5	10	7,664	n.	29	n.	12	16	2	12	4.4	1.9	0.0
Marquette	734	77	111	29.26	30.08	+.06	37.2	−0.6	61	30	43	18	2	31	24	33	27	66	2.06	−0.4	9	6,151	nw.	27	se.	4	11	5	14	5.8	6.5	0.0
Port Huron	638	70	120	29.29	30.00	−.02	40.4	−2.6	68	29	48	23	12	33	29	35	30	69	1.75	−0.5	9	8,757	n.	28	nw.	27	8	5	17	6.7	5.3	0.0
Sault Sainte Marie	614	11	52	29.35	30.07	+.04	36.4	−1.0	67	22	45	13	2	28	33	31	25	67	1.16	−1.0	8	6,725	nw.	29	nw.	27	15	5	10	4.6	2.2	0.0
Chicago	673	7	131	29.28	30.02	+.02	46.4	−0.5	71	2	53	31	12	40	33	40	35	71	0.58	−2.2	6	8,540	ne.	29	nw.	11	13	6	11	5.1	T.	0.0
Green Bay	617	109	141	29.37	30.04	+.03	41.8	−1.4	68	22	50	21	3	34	32	36	28	63	1.28	−1.4	8	8,306	ne.	31	ne.	25	13	3	14	6.0	4.1	0.0
Milwaukee	681	97	221	29.28	30.03	+.04	44.2	+0.4	65	28	50	29	12	38	25	37	30	64	0.54	−2.1	7	9,827	n.	32	se.	4	13	6	11	5.3	T.	0.0
Duluth	1,133	5	47	28.82	30.06	+.05	37.7	+0.7	66	28	46	15	3	29	33	32	26	69	3.08	+1.0	7	8,902	ne.	40	nw.	30	9	11	10	5.5	11.3	0.0
North Dakota							44.6	+3.7										72	2.26	+0.6										6.5		
Moorhead	940	50	58	28.99	30.02	+.03	43.6	+3.0	75	22	53	14	3	34	30	38	33	71	1.06	−1.1	11	7,235	se.	21	n.	30	5	7	18	7.1	1.9	0.0
Bismarck	1,674	8	57	28.16	29.96	−.01	46.8	+4.7	74	22	58	21	26	36	41	41	36	73	2.08	+0.6	8	8,085	e.	30	se.	20	7	10	13	6.4	1.2	0.0
Devils Lake	1,478	11	44	28.43	30.03	+.04	41.8	+3.0	69	21	52	9	3	32	28	37	32	76	2.58	+1.1	13	8,295	e.	26	n.	25	6	11	13	6.5	1.8	0.0
Ellendale	1,457	10	56	28.41	29.99	------	45.2	------	78	22	56	19	3	35	38	----	----	----	4.47	+2.4	13	11,107	se.	38	se.	22	6	5	19	7.4	0.6	0.0
Grand Forks	833	12	67	----	----	----	41.8	------	73	21	51	6	3	32	29	38	----	----	2.48	------	12	------	se.	26	n.	25	6	7	17	----	1.8	0.0
Williston	1,878	41	48	27.96	29.96	.00	46.2	+4.2	72	14	57	22	26	35	37	40	34	68	1.13	−0.1	10	7,315	se.	35	nw.	1	10	9	11	5.3	1.1	0.0
Upper Mississippi Valley							51.1	+0.9										65	1.98	−0.9										5.9		
Minneapolis	918	102	208	29.00	30.00	------	46.6	+0.2	78	22	56	24	12	38	27	----	----	----	2.15	−0.1	9	8,296	se.	30	se.	23	5	9	16	6.9	2.2	0.0
St. Paul	837	114	149	29.10	30.02	+.03	46.6	+1.0	76	22	56	25	12	38	28	----	----	----	2.39	0.0	9	6,456	se.	23	n.	11	8	11	11	5.7	1.5	0.0
La Crosse	714	11	48	29.24	30.02	+.04	47.4	+0.2	78	22	58	27	1	37	32	40	33	64	2.81	+0.4	9	4,634	se.	18	se.	6	7	10	13	5.9	T.	0.0
Madison	974	70	78	28.96	30.03	+.04	44.6	−0.8	73	22	53	27	12	36	27	38	31	63	1.04	−1.7	9	7,199	nw.	29	n.	25	8	7	15	6.0	T.	0.0
Wausau	1,247	4	62	28.70	30.06	------	42.1	------	75	22	53	19	2	32	34	----	----	----	2.20	−0.4	7	5,555	e.	22	n.	11	16	5	9	4.1	3.2	0.0
Charles City	1,015	10	51	28.92	30.01	+.03	47.3	+0.9	77	22	58	27	12	37	34	41	36	69	1.39	−1.1	8	6,026	se.	21	nw.	2	7	13	10	5.6	0.0	0.0
Davenport	606	118	143	29.33	29.99	+.01	50.3	+0.4	80	22	61	30	12	40	38	43	37	65	1.51	−1.2	10	8,116	e.	32	nw.	2	7	9	14	6.3	T.	0.0
Des Moines	861	5	99	29.06	29.98	+.01	51.4	+1.3	78	1	62	30	12	41	46	44	38	66	1.00	−1.9	10	8,126	e.	30	nw.	7	5	7	18	7.0	T.	0.0
Dubuque	700	81	96	29.25	30.01	+.03	48.2	−0.4	77	22	58	30	12	38	30	41	34	64	1.81	−1.0	8	5,568	se.	24	nw.	2	8	8	14	6.2	T.	0.0
Keokuk	614	64	78	29.31	29.99	+.01	53.3	+1.6	80	6	64	32	27	43	39	46	38	62	1.20	−1.8	8	6,232	e.	24	w.	2	5	11	14	6.5	0.0	0.0
Cairo	358	87	93	29.58	29.97	−.02	60.3	+2.2	82	22	69	40	27	52	28	53	47	66	3.28	−0.4	7	7,070	s.	32	sw.	2	6	9	15	6.6	0.0	0.0
Peoria	609	11	45	29.34	30.00	+.01	51.4	+0.5	80	22	62	28	13	40	37	44	38	65	1.99	−1.4	10	6,077	nw.	23	w.	2	12	4	14	5.4	T.	0.0
Springfield, Ill	636	5	191	29.29	29.97	−.01	54.4	+1.7	82	2	65	34	12	44	38	47	40	66	1.49	−2.0	9	8,368	se.	31	s.	4	9	8	13	5.6	0.0	0.0
Hannibal	534	74	109	29.40	29.97	−.01	55.8	+2.4	83	6	66	32	14	46	37	----	----	----	2.20	−1.0	9	7,112	e.	30	sw.	2	8	10	12	6.0	0.0	0.0
St. Louis	568	265	303	29.35	29.96	−.02	58.0	+2.2	84	2	68	38	14	48	33	49	41	60	3.19	−0.6	7	8,768	s.	40	sw.	4	11	13	6	4.8	0.0	0.0
Missouri Valley							54.5	+3.4										64	2.13	−0.7										5.9		
Columbia, Mo.	784	6	84	29.12	29.96	−.02	57.4	+2.5	84	6	68	33	14	46	41	----	----	----	2.04	−1.7	10	7,003	e.	25	sw.	4	8	9	13	6.0	0.0	0.0
Kansas City	963	161	181	28.91	29.94	−.02	57.8	+3.0	82	1	67	35	27	49	33	50	42	61	2.50	−0.6	10	7,904	e.	32	sw.	1	10	9	11	5.4	0.0	0.0
St. Joseph	967	11	49	28.90	29.94	------	56.3	------	83	1	67	33	27	46	42	48	41	63	2.82	−0.2	11	7,519	se.	30	nw.	4	14	5	11	5.0	0.0	0.0
Springfield, Mo.	1,324	98	104	28.54	29.94	−.03	58.9	+2.9	82	22	68	37	27	49	29	50	42	60	3.26	−0.6	6	8,057	se.	30	sw.	24	17	9	4	2.9	0.0	0.0
Iola	984	11	50	28.87	29.91	−.04	59.2	+3.0	85	2	70	35	27	43	45	----	----	----	2.94	−0.6	8	5,976	s.	23	n.	16	9	11	10	5.7	0.0	0.0
Topeka	987	92	107	----	----	----	57.3	+2.6	84	1	67	34	11	47	40	----	----	----	2.58	−0.2	8	7,382	se.	32	nw.	7	11	7	12	5.2	0.0	0.0
Lincoln	1,189	11	81	28.66	29.93	−.01	54.6	+3.1	82	5	65	30	27	44	40	47	40	64	1.20	−1.3	6	8,209	se.	30	se.	23	6	10	14	6.6	0.0	0.0
Omaha	1,105	115	122	28.76	29.95	.00	54.1	+2.9	81	1	64	32	12	45	39	46	38	61	1.79	−0.7	8	6,880	e.	28	n.	7	8	7	15	6.5	0.0	0.0
Valentine	2,598	47	54	27.22	29.94	.00	50.4	+4.7	78	22	62	24	26	39	44	43	35	64	2.34	+0.5	9	9,218	n.	38	se.	21	5	8	17	6.9	1.1	0.0
Sioux City	1,135	94	164	28.73	29.95	.00	51.8	+4.0	75	1	62	28	12	42	40	45	38	66	1.65	−1.0	7	9,279	se.	32	nw.	2	5	8	17	7.3	T.	0.0
Huron	1,306	59	74	28.56	29.97	+.01	48.4	+3.3	75	1	58	25	12	38	43	43	37	69	1.52	−0.7	14	8,586	se.	35	nw.	2	8	9	13	6.0	0.9	0.0
Pierre	1,572	70	75	28.25	29.92	−.03	51.7	+4.9	79	5	62	28	26	41	41	45	38	67	2.34	+0.5	13	9,353	e.	35	nw.	29	6	11	13	6.5	T.	0.0
Yankton	1,233	49	57	28.62	29.94	−.01	52.1	+4.2	76	1	62	28	12	42	39	----	----	----	0.70	−2.1	7	7,170	se.	27	se.	21	8	7	15	6.6	T.	0.0

TABLE 1.—*Climatological data for Weather Bureau stations, April, 1932*—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max. K2 mean min. K2	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with .01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
	Ft.	*Ft.*	*Ft.*	*In.*	*In.*	*In.*	°F.	°F.	°F.		°F.	°F.		°F.	°F.	°F.	°F.	%	*In.*	*In.*		*Miles*								*0–10*	*In.*	*In.*
Northern Slope							**45.6**	**+2.4**										**59**	**2.06**	**+0.5**										**6.5**		
Billings	3,140	5					46.2		77	13	60	20	10	33	44				2.24		10		nw.				7	9	14		0.0	0.0
Havre	2,505	11	67	27.28	29.92	−0.01	47.7	+4.0	81	13	59	28	7	36	43	40	31	59	1.69	+0.7	14	7,660	sw.	39	sw.	16	6	12	12	6.1	T.	0.0
Helena	4,124	89	113	25.73	29.95	−.02	44.3	+0.8	74	13	54	28	26	35	36	37	29	59	0.70	−0.4	8	6,431	sw.	38	sw.	16	3	12	15	7.0	5.0	0.0
Kalispell	2,973	48	56	26.88	29.95	−.01	44.2	+0.6	72	13	54	27	9	34	36	38	31	66	1.06	+0.3	12	5,022	nw.	25	sw.	1	2	17	11	6.9	0.1	0.0
Miles City	2,371	48	55	27.40	29.95	−.01	49.4	+4.7	81	14	59	26	26	40	37	42	34	62	3.44	+2.3	9	5,809	nw.	36	w.	14	8	9	13	6.2	T.	0.0
Rapid City	3,259	50	58	26.52	29.94	−.01	49.3	+5.0	80	22	60	21	26	39	43	41	32	59	4.10	+2.1	15	7,386	n.	30	s.	27	7	8	15	6.4	4.5	0.0
Cheyenne	6,088	84	101	23.92	29.90	−.01	43.0	+2.1	73	21	55	17	26	31	35	34	23	52	1.67	−0.3	9	10,595	nw.	43	nw.	23	6	11	13	6.3	8.5	T.
Lander	5,372	60	68	24.57	29.93	−.01	43.2	+0.8	71	16	55	22	29	31	39	34	24	53	2.33	+0.3	10	4,850	sw.	33	s.	20	8	10	12	6.0	18.9	T.
Sheridan	3,790	10	47	26.02	29.93		45.8		77	13	58	21	10	33	44	37	29	61	2.73	+0.8	9	5,981	nw.	31	nw.	14	5	11	14	6.4	0.7	0.0
Yellowstone Park	6,241	11	48	23.82	29.99	+.03	36.6	−0.4	64	16	47	12	6	26	38	30	23	62	1.06	−0.4	12	1,277	sw.	30	sw.	2	3	9	18	7.3	12.2	0.0
North Platte	2,821	11	51	26.98	29.90	−.02	52.6	+4.0	89	21	65	26	26	41	41	44	35	61	1.80	−0.3	8	7,605	se.	30	nw.	6	6	7	17	6.8	0.1	0.0
Middle Slope							**56.6**	**+3.2**										**53**	**1.44**	**−0.9**										**5.7**		
Denver	5,292	106	113	24.63	29.86	−.04	51.2	+4.1	80	21	63	24	26	39	36	38	23	42	1.39	−0.7	8	6,557	s.	32	ne.	9	6	12	12	6.0	2.7	0.0
Pueblo	4,685	80	86	25.20	29.86	−.02	52.4	+2.3	82	21	68	20	28	37	47	39	25	45	1.47	+0.2	5	6,316	n.	41	nw.	23	11	14	5	4.8	5.4	0.0
Concordia	1,392	50	58	28.46	29.94	+.01	56.2	+2.7	85	1	67	29	11	45	42	48	40	64	1.43	−0.9	9	6,814	se.	24	s.	6	8	10	12	5.7	0.0	0.0
Dodge City	2,509	88	100	27.32	29.90	.00	56.5	+2.9	86	5	69	27	11	44	42	46	37	56	1.08	−0.9	6	10,079	nw.	38	nw.	3	11	12	7	4.7	T.	0.0
Wichita	1,358	139	158	28.47	29.90	−.03	59.9	+3.5	83	13	70	35	11	50	36	50	40	55	2.33	−0.6	7	9,864	s.	35	s.	3	7	6	17	6.6	0.0	0.0
Oklahoma City	1,214	10	47	28.63	29.90	−.02	63.5	+3.7	87	13	74	37	11	53	39	52	44	58	0.93	−2.4	8	8,294	s.	30	sw.	2	6	11	13	6.3	0.0	0.0
Southern Slope							**64.7**	**+1.9**										**46**	**1.39**	**−0.4**										**4.1**		
Abilene	1,738	10	52	28.10	29.89	−.01	68.0	+3.6	93	13	81	39	11	55	38	54	42	49	2.67	0.0	7	9,090	s.	32	w.	9	16	6	8	4.0	0.0	0.0
Amarillo	3,676	10	49	26.18	29.88	−.01	59.0	+3.2	86	2	73	32	11	45	40	46	34	50	2.21	+0.4	8	6,922	s.	30	sw.	23	13	10	7	4.6	0.0	0.0
Big Spring	2,537	5	62				64.8		91	13	80	34	11	50	43				2.40		5		s.				17	5	8	3.8	0.0	0.0
Del Rio	944	64	71	28.87	29.84	−.05	71.6	+1.0	95	25	83	45	12	60	40	59	48	52	0.17	−1.6	4	7,945	se.	38	se.	26	13	9	8	5.0	0.0	0.0
Roswell	3,566	75	85	26.28	29.85	.00	60.3	−0.3	88	16	77	33	11	43	47	44	25	33	0.51	−0.4	1	6,459	s.	41	nw.	9	17	8	5	3.1	0.0	0.0
Southern Plateau							**58.9**	**+1.6**										**35**	**0.27**	**−0.1**										**2.9**		
El Paso	3,778	152	175	26.11	29.84	+.01	65.1	+1.7	87	14	79	38	23	51	38	45	21	22	T.	−0.3	0	7,803	nw.	42	nw.	22	20	9	1	2.1	0.0	0.0
Albuquerque	4,972	51	66	24.98	29.81		55.1		80	16	71	31	28	39	43	40	24	36	0.34		3	4,999	sw.	38	se.	26	16	9	5	3.7	0.5	0.0
Santa Fe	7,013	38	53	23.18	29.84	.00	48.1	+1.4	72	13	62	22	10	35	34	36	22	41	1.28	+0.3	5	5,457	e.	28	se.	26	13	10	7	4.4	4.3	0.0
Flagstaff	6,907	10	59	23.28	29.83	−.01	43.2	+1.0	70	18	59	18	22	28	42	34		51	1.32		6	6,912	sw.	36	sw.	20	13	10	7		T.	0.0
Phoenix	1,108	10	107	28.69	29.84	−.03	69.2	+2.2	95	12	85	45	22	54	42	50	30	29	0.05	−0.4	2	4,565	e.	29	sw.	20	20	6	4	2.6	0.0	0.0
Yuma	141	9	54	29.71	29.86	−.03	70.4	+0.9	98	11	88	43	22	53	43	53	34	33	T.	−0.1	0	4,565	w.	30	w.	21	22	7	1	1.8	0.0	0.0
Independence	3,957	6	27	25.89	29.90	.00	57.6	+2.5	82	1	74	28	27	41	42	40			0.00	−0.1	0		nw.				19	6	5		0.0	0.0
Middle Plateau							**48.7**	**+0.3**										**45**	**1.00**	**0.0**										**5.4**		
Reno	4,532	74	81	25.40	29.92	−.05	47.4	+0.1	75	10	60	22	6	35	41	37	25	46	0.21	−0.3	5	6,915	w.	41	sw.	4	10	11	9	5.1	0.4	0.0
Tonopah	6,090	12	20				47.4		70	2	58	23	22	37	30	35	20	41	0.48		3		nw.									
Winnemucca	4,344	18	56	25.55	29.94	−.02	46.6	−0.1	76	11	61	20	6	32	46	37	26	53	1.26	+0.4	7	6,116	sw.	30	w.	4	9	12	9	5.5	1.2	0.0
Modena	5,473	10	43	24.53	29.86	−.02	46.0	0.0	73	11	62	18	7	30	46	35	20	43	0.25	−0.6	5	8,140	sw.	37	sw.	20	10	8	12	5.4	4.4	0.0
Salt Lake City	4,360	163	203	25.55	29.91	−.01	50.4	+0.8	76	16	60	30	6	40	33	40	28	47	2.04	0.0	9	6,008	nw.	32	sw.	2	7	14	9	5.7	4.3	0.0
Grand Junction	4,602	60	68	25.29	29.85	−.03	52.9	+0.5	79	16	65	31	9	40	36	40	24	41	1.24	+0.4	7	5,706	se.	35	sw.	20	10	9	11	5.3	0.9	0.0
Northern Plateau							**50.7**	**+0.9**										**53**	**1.00**	**−0.2**										**6.4**		
Baker	3,471	48	53	26.38	29.98	−.02	45.0	−0.2	71	12	57	24	6	34	35	39	32	62	0.53	−0.6	8	5,502	se.	24	sw.	2	4	15	11	6.3	1.2	0.0
Boise	2,739	79	87	27.09	29.95	−.03	51.4	+1.0	78	11	63	32	6	40	36	42	31	52	1.75	+0.6	12	5,324	se.	24	se.	16	5	10	15	6.7	T.	0.0
Lewiston	757	40	48	29.14	29.95	−.04	53.5	+0.6	80	13	65	34	20	42	38				0.61	−0.5	10	3,389	ne.	32	nw.	13	2	14	14	7.0	0.0	0.0
Pocatello	4,477	60	68	25.40	29.93	−.01	47.2	+1.2	73	13	58	25	6	36	35	38	29	56	1.75	+0.3	15	6,476	se.	32	sw.	26	6	18	6	5.4	2.7	0.0
Spokane	1,929	101	110	27.90	29.95	−.04	50.0	+1.6	76	13	59	34	6	41	33	41	32	55	0.93	−0.2	12	5,037	s.	19	ne.	26	3	16	11	6.8	0.0	0.0
Walla Walla	991	57	65	28.86	29.94	−.07	54.2	+1.1	83	13	64	36	6	44	33	45	35	49	0.94	−0.6	9	4,710	s.	26	w.	13	6	14	10	5.8	0.0	0.0
Yakima	1,076	58	67	28.79	29.94		53.8	+1.3	78	12	65	32	20	43	32	43	30	44	0.22	−0.2	4	5,303	nw.	24	w.	19	5	10	15	6.7	0.0	0.0
North Pacific Coast Region							**50.2**	**+1.1**										**75**	**3.32**	**+0.5**												
North Head	211	11	56	29.77	30.00	−.05	48.2	+0.7	62	30	52	39	20	44	16	45	43	86	5.22	+1.1	19	11,342	s.	55	s.	4	1	11	18	7.9	0.0	0.0
Port Angeles	29	8	53				48.0		70	25	55	33	3	41	29				0.92	−0.6	13	4,823	s.	25	w.	27	2	13	15		0.0	0.0
Seattle	125	215	250	29.83	29.96	−.07	50.7	+1.3	70	26	58	38	7	44	26	45	40	70	2.48	+0.1	13	6,826	s.	32	s.	4	1	15	14	7.4	0.0	0.0
Tacoma	194	172	201	29.77	29.98	−.05	50.6	+1.9	69	26	58	37	3	43	27				3.43	+0.6	16	6,396	n.	35	s.	4	2	10	18	7.8	0.0	0.0
Tatoosh Island	86	9	53	29.85	29.95	−.05	47.5	+1.4	61	9	51	40	20	44	15	45	43	86	5.84	+0.2	19	9,450	e.	40	s.	6	3	2	25	8.5	0.0	0.0
Medford	1,329	29	58	28.59	30.01		50.0		78	11	62	28	8	38	42	44	38	70	2.44	+1.2	14	4,470	nw.	37	se.	13	3	9	18	7.3	0.0	0.0
Portland, Oreg.	153	68	106	29.84	29.99	−.07	53.2	+1.4	75	30	62	38	21	45	29	47	42	70	3.57	+0.7	17	4,799	se.	26	sw.	13	1	5	24	8.4	0.0	0.0
Roseburg	510	75	99	29.47	30.03	−.04	51.0	0.0	77	11	62	33	3	40	37	45	38	70	2.67	+0.4	18	3,797	sw.	27	sw.	13	2	18	10	6.5	0.0	0.0
Middle Pacific Coast Region							**55.2**	**−0.6**										**70**	**1.72**	**−0.1**										**5.1**		
Eureka	62	73	89	30.02	30.09	−.02	49.7	−0.2	65	30	56	37	25	44	20	47	44	81	4.87	+1.5	18	5,429	se.	30	sw.	13	4	11	15	6.4	0.0	0.0
Red Bluff	330	5	58	29.64	30.00	−.03	57.6	−1.4	83	11	70	39	6	46	37	48	39	58	2.29	+0.6	11	4,959	nw.	25	w.	4	10	9	11	5.6	0.0	0.0
Sacramento	69	106	117	29.94	30.01	.00	56.8	−1.3	82	10	68	38	21	45	34	50	45	70	0.76	−0.8	5	5,832	s.	21	s.	25	17	9	4	3.4	0.0	0.0
San Francisco	155	208	243	29.88	30.05	.00	56.0	+1.0	79	10	63	45	5	49	28	49	44	70	0.47	−1.1	8	6,116	w.	29	w.	20	10	12	8	5.1	0.0	0.0
San Jose	141	12	110	29.90	30.06		55.8	−0.9	83	11	68	36	6	44	41				0.20	−0.9	7	5,246	nw.	26	nw.	20	10	10	10	5.2	0.0	0.0
South Pacific Coast Region							**61.0**	**+1.6**										**61**	**0.34**	**−0.6**										**3.9**		
Fresno	327	89	98	29.65	30.01	+.02	60.2	0.0	88	11	74	39	5	47	38	49	38	55	0.22	−0.7	4	6,031	nw.	26	nw.	4	15	10	5	4.1	0.0	0.0
Los Angeles	338	159	191	29.61	29.98	−.01	62.6	+3.2	91	10	72	45	26	53	30	52	43	59	0.30	−0.7	3	4,498	sw.	21	sw.	20	19	9	2	2.8	0.0	0.0
San Diego	87	62	70	29.88	29.97	−.02	60.2	+1.7	83	9	67	47	26	53	29	53	48	70	0.50	−0.3	4	5,301	nw.	27	w.	20	10	13	7	4.8	0.0	0.0
West Indies																																
San Juan, P. R.	82	9	54	29.86	29.95		77.8	+1.2	91	21	83	68	14	73	17				5.92	+1.6	10	8,248	e.	24	e.	6	6	19	5	5.6	0.0	0.0

TABLE 1.—*Climatological data for Weather Bureau stations, April, 1932*—Continued

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station, reduced to mean of 24 hours	Pressure: Sea level, reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max.+mean min.÷2	Temperature of the air: Departure from normal	Temperature of the air: Maximum	Temperature of the air: Date	Temperature of the air: Mean maximum	Temperature of the air: Minimum	Temperature of the air: Date	Temperature of the air: Mean minimum	Temperature of the air: Greatest daily range	Mean wet thermometer	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Days with .01, or more	Wind: Total movement	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Clear days	Partly cloudy days	Cloudy days	Average cloudiness, tenths	Total snowfall	Snow, sleet, and ice on ground at end of month
	Ft.	*Ft.*	*Ft.*	*In.*	*In.*	*In.*	°F.	°F.	°F.		°F.	°F.		°F.	°F.	°F.	°F.	%	*In.*	*In.*		*Miles*								*0–10*	*In.*	*In.*
							61.0	+1.6										61	0.34	−0.6											3.9		
Panama Canal																																
Balboa Heights	118	6	97	------	[1]29.78	−.04	82.4	+0.8	94	11	90	73	26	75	19	----	----	[1]80	7.56	+4.6	11	5,321	nw.	24	nw.	9	0	20	10	7.0	0.0	0.0
Cristobal	36	6	97	------	[1]29.80	−.05	83.0	+1.2	92	27	88	76	1	78	15	77	75	[1]81	2.23	−2.0	19	7,893	n.	25	n.	14	0	13	17	7.5	0.0	0.0
Alaska																																
Fairbanks	455	11	44	[2]29.28	[2]29.80	------	32.8	------	60	28	46	1	8	20	35	30	22	65	0.06	------	2	3,230	n.	18	n.	19	14	13	3	3.7	0.9	0.0
Juneau	80	11	50	[2]29.78	[2]29.87	------	43.1	------	64	29	51	29	6	35	28	38	32	67	2.80	------	11	4,438	s.	23	s.	10	12	4	14	5.4	0.4	0.0
Hawaiian Islands																																
Honolulu	38	86	100	[2]30.03	[2]30.07	------	73.0	0.0	81	17	77	64	29	69	11	67	63	74	3.41	+1.3	20	8,451	e.	30	ne.	1	3	22	5	5.5	0.0	0.0

[1] Observations taken bihourly.

[2] Pressure not reduced to mean of 24 hours.

TABLE 2.—*Data furnished by the Canadian Meteorological Service, April, 1932*

Stations	Altitude above mean sea level, Jan. 1, 1919	Pressure: Station reduced to mean of 24 hours	Pressure: Sea level reduced to mean of 24 hours	Pressure: Departure from normal	Temperature of the air: Mean max.+mean min.÷2	Temperature of the air: Departure from normal	Temperature of the air: Mean maximum	Temperature of the air: Mean minimum	Temperature of the air: Highest	Temperature of the air: Lowest	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Total snowfall
	Feet	*Inches*	*Inches*	*Inches*	°F.	°F.	°F.	°F.	°F.	°F.	*Inches*	*Inches*	*Inches*
Cape Race, N. F	99				35.3		39.7	30.9	50	24	5.13		
Sydney, C. B. I	48	29.78	29.83	−0.06	39.0	+4.0	46.5	31.4	58	26	4.67	+0.82	2.5
Halifax, N. S	88	29.71	29.81	−.15	40.2	+2.4	48.2	32.2	60	25	7.23	+3.05	1.8
Yarmouth, N. S	65	29.72	29.79	−.17	40.6	+1.7	47.3	33.9	61	25	3.31	−0.51	3.0
Charlottetown, P. E. I	38	29.74	29.78	−.12	37.0	+1.8	43.0	31.0	58	24	2.74	+0.09	8.0
Chatham, N. B	28	29.72	29.75	−.15	38.8	+3.3	47.9	29.7	65	21	4.43	+1.80	2.3
Father Point, Que	20	29.83	29.85	−.08	34.6	+1.4	40.6	28.6	53	16	2.58	+1.00	13.4
Quebec, Que	296	29.56	29.89	−.10	36.5	+1.4	43.6	29.4	65	12	2.33	+0.24	6.3
Doucet, Que	1,236				26.4		37.7	15.2	56	−20	1.94		10.0
Montreal, Que	187	29.69	29.90	−.10	39.6	−0.1	46.7	32.5	71	19	3.73	+1.49	12.8
Ottawa, Ont	236	29.67	29.94	−.08	38.9	−1.1	48.1	29.7	75	15	2.89	+1.39	12.1
Kingston, Ont	285	29.63	29.95	−.07	36.8	3.2	43.4	30.3	65	18	2.22	+0.43	5.8
Toronto, Ont	379	29.56	29.98	−.04	40.8	0.0	48.2	33.4	76	20	2.62	+0.25	8.7
Cochrane, Ont	930				28.9		39.1	18.8	73	−7	2.27		13.9
White River, Ont	1,244	28.71	30.06	+.02	30.4	−2.6	43.6	17.1	70	−30	0.88	−0.37	2.0
London, Ont	808												
Southampton, Ont	656	29.28	30.01	−.02	37.1	−1.6	45.1	29.2	71	5	2.36	+0.56	15.1
Parry Sound, Ont	688	29.27	29.97	−.05	36.5	−1.1	45.7	27.3	71	5	2.97	+1.06	14.0
Port Arthur, Ont	644	29.36	30.08	+.05	36.6	+3.1	45.3	27.9	66	6	0.83	−0.89	
Winnipeg, Man	760												
Minnedosa, Man	1,690	28.22	30.08	+.07	36.9	+0.9	46.7	27.2	69	−10	1.55	+0.49	3.7
Le Pas, Man	860				33.8		44.8	22.9	65	−16			
Qu'Appelle, Sask	2,115	27.71	29.98	−.01	39.6	+2.2	50.1	29.2	67	9	1.01	−0.04	2.2
Moose Jaw, Sask	1,759				43.4		54.6	32.2	72	20	1.09		T.
Swift Current, Sask	2,392	27.34	29.86	−.10	45.1	+3.8	55.5	34.7	78	26	1.39	+0.46	0.1
Medicine Hat, Alb	2,365												
Calgary, Alb	3,540												
Banff, Alb	4,521												
Prince Albert, Sask	1,450	28.47	30.08	+.10	37.9	+1.8	48.1	27.7	66	−3	1.00	+0.17	4.9
Battleford, Sask	1,592	28.23	29.99	+.02	37.4	+0.2	46.8	28.0	65	10	0.82	+0.35	0.6
Edmonton, Alb	2,150												
Kamloops, B. C	1,262												
Victoria, B. C	230	29.70	29.95	−.06	49.1	+2.3	54.7	43.5	63	39	1.16	−1.21	0.0
Barkerville, B. C	4,180												
Estevan Point, B. C	20												
Prince Rupert, B. C	170												
Hamilton, Ber	151												

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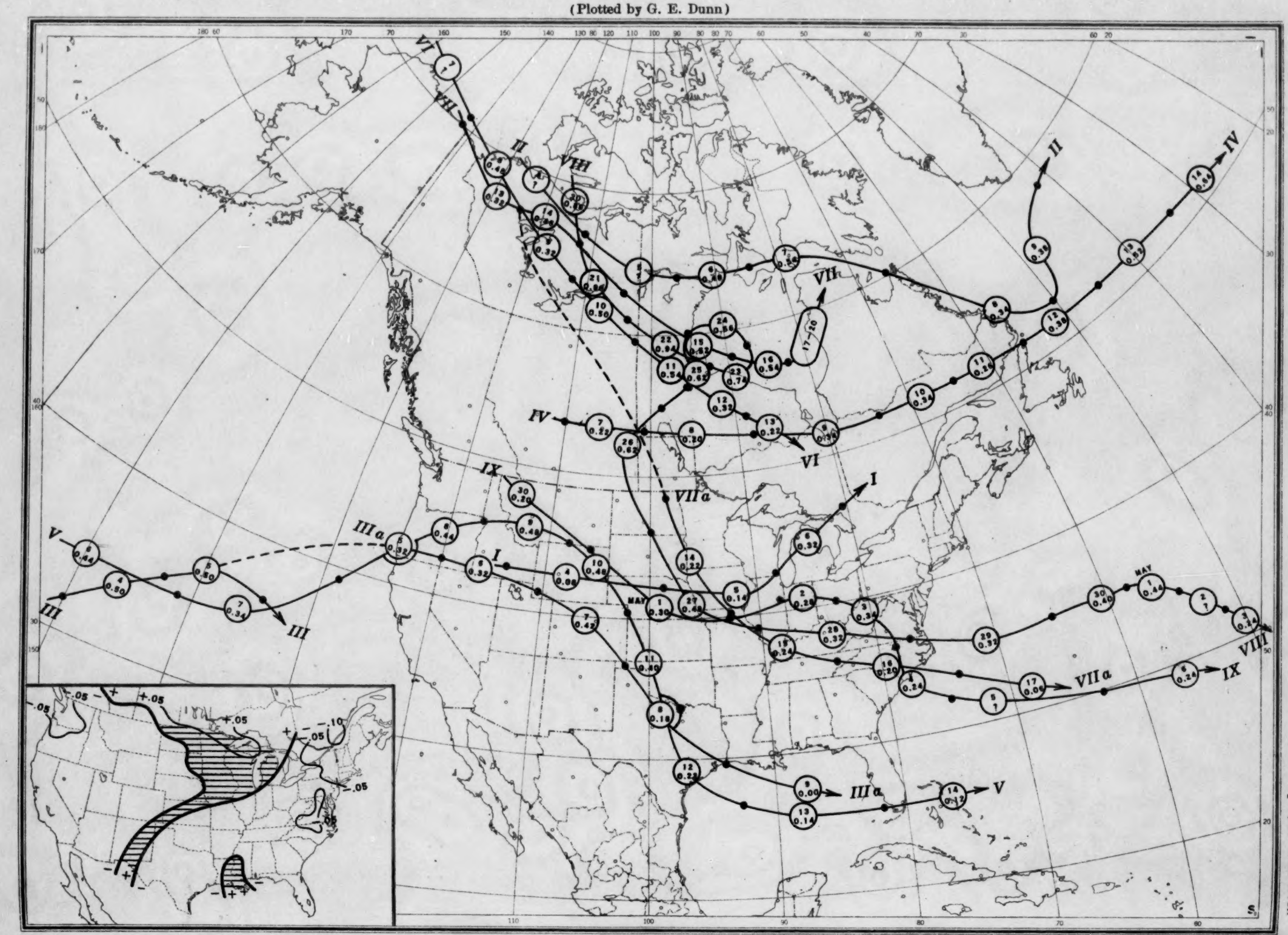
Father Point, Que	20	29.62	29.64	−.26	21.5	+1.2	27.7	15.3	40	−2	5.58	+2.85	52.2
Winnipeg, Man	760	29.22	30.10	+.01	9.3	−3.0	17.8	0.8	38	−20	2.00	+0.97	20.0
Kamloops, B. C	1,262	28.70	30.02	+.10	36.1	0.0	44.0	28.2	62	10	0.81	+0.24	5.2
Estevan Point, B. C	20				42.4		47.5	37.3	52	28	11.89		0.0
Prince Rupert, B. C	170				40.4		45.5	35.3	57	25	6.60		T.
Hamilton, Ber	151	29.76	29.92	−.16	62.3	+0.1	68.6	56.0	75	48	5.94	+0.81	0.0

Chart I. Departure (°F.) of the Mean Temperature from the Normal, April, 1932

Chart I. Departure (°F.) of the Mean Temperature from the Normal, April, 1932

Chart II. Tracks of Centers of Anticyclones, April, 1932. (Inset) **Departure of Monthly Mean Pressure from Normal**

(Plotted by G. E. Dunn)



Circle indicates position of anticyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 8 p. m. (75th meridian time).

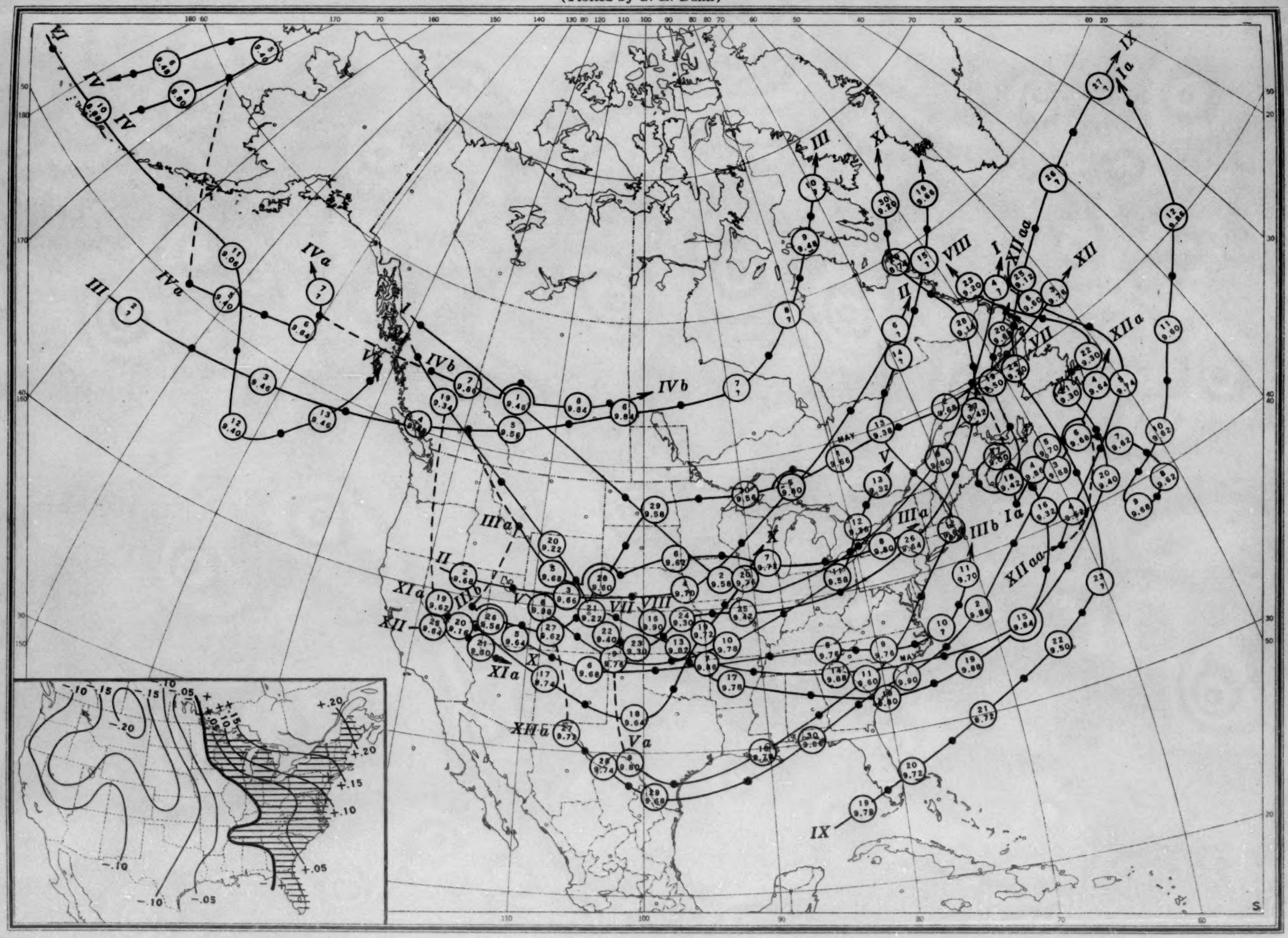
April, 1932. M. W. R.

Chart III. Tracks of Centers of Cyclones, April, 1932. (Inset) **Change in Mean Pressure from Preceding Month**

(Plotted by G. E. Dunn)

Chart III. Tracks of Centers of Cyclones, April, 1932. (Inset) **Change in Mean Pressure from Preceding Month**

(Plotted by G. E. Dunn)



Circle indicates position of cyclone at 8 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 8 p. m. (75th meridian time).

April, 1932. M. W. R.

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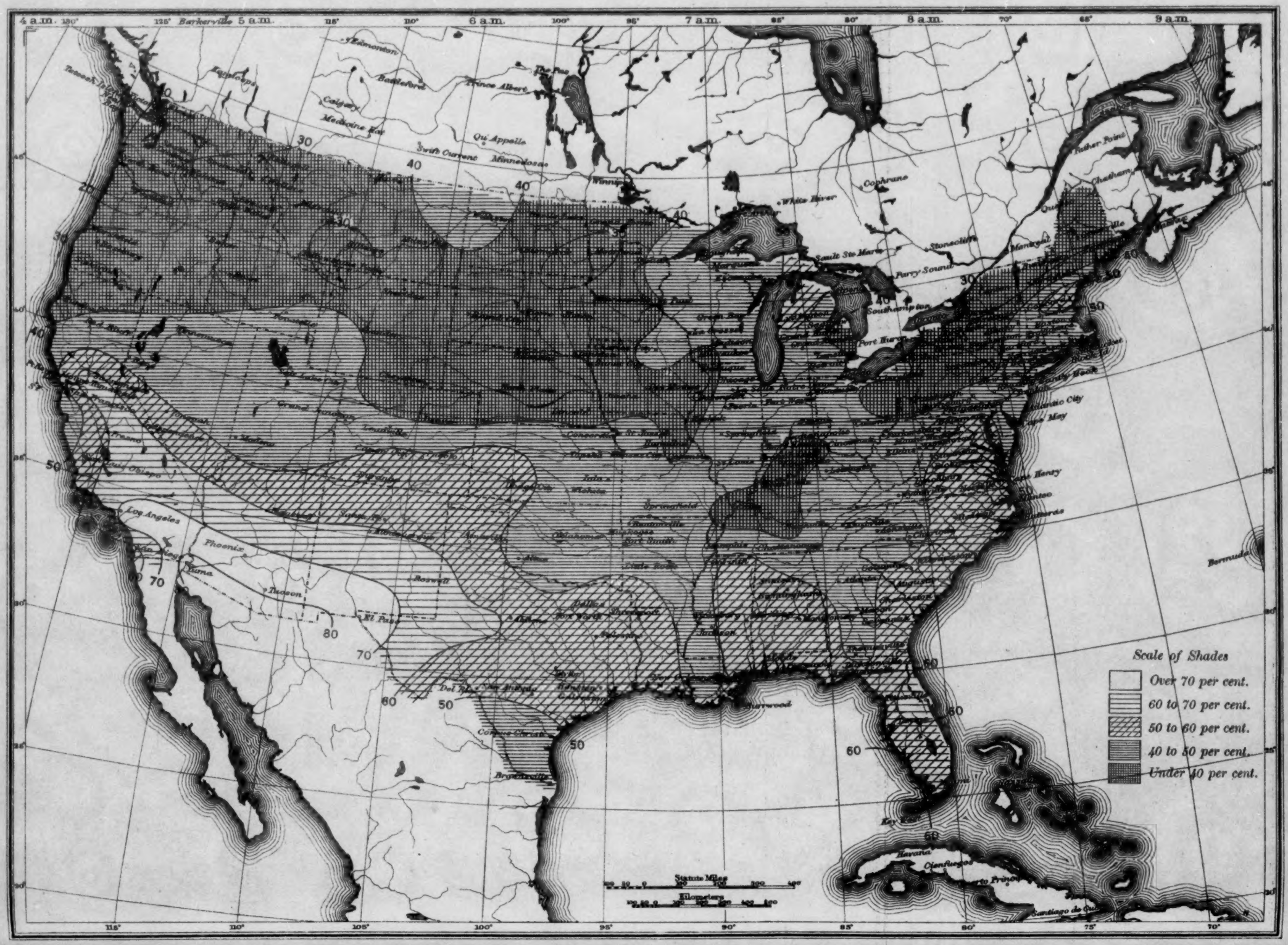
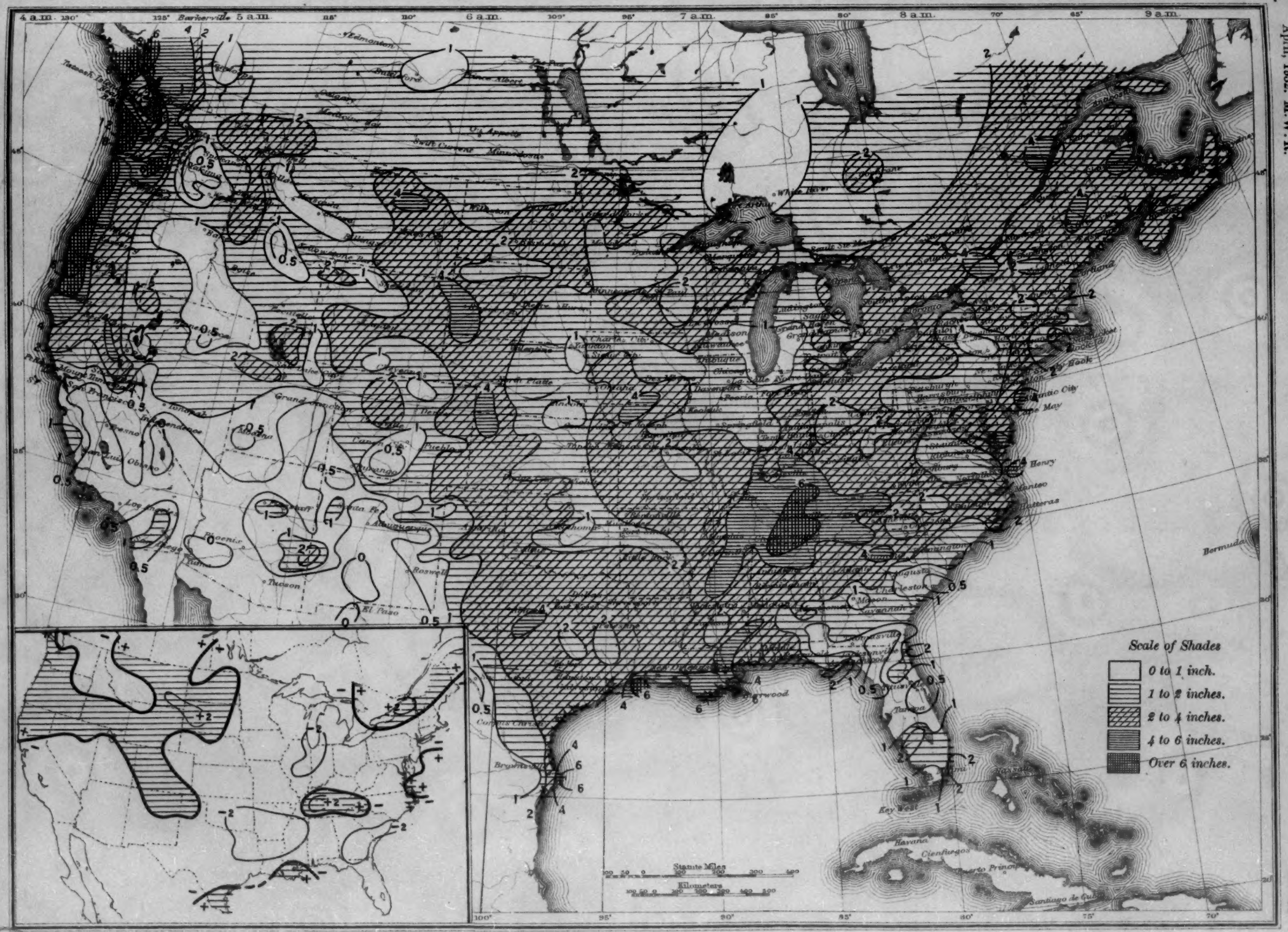
Chart IV. Percentage of Clear Sky between Sunrise and Sunset, April, 1932



April, 1932. M. W. R.

Chart V. Total Precipitation, Inches, April, 1932. (Inset) Departure of Precipitation from Normal

Chart V. Total Precipitation, Inches, April, 1932. (Inset) **Departure of Precipitation from Normal**



April, 1932. M. W. R.

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Chart VI. Isobars at Sea level and Isotherms at Surface; Prevailing Winds, April, 1932

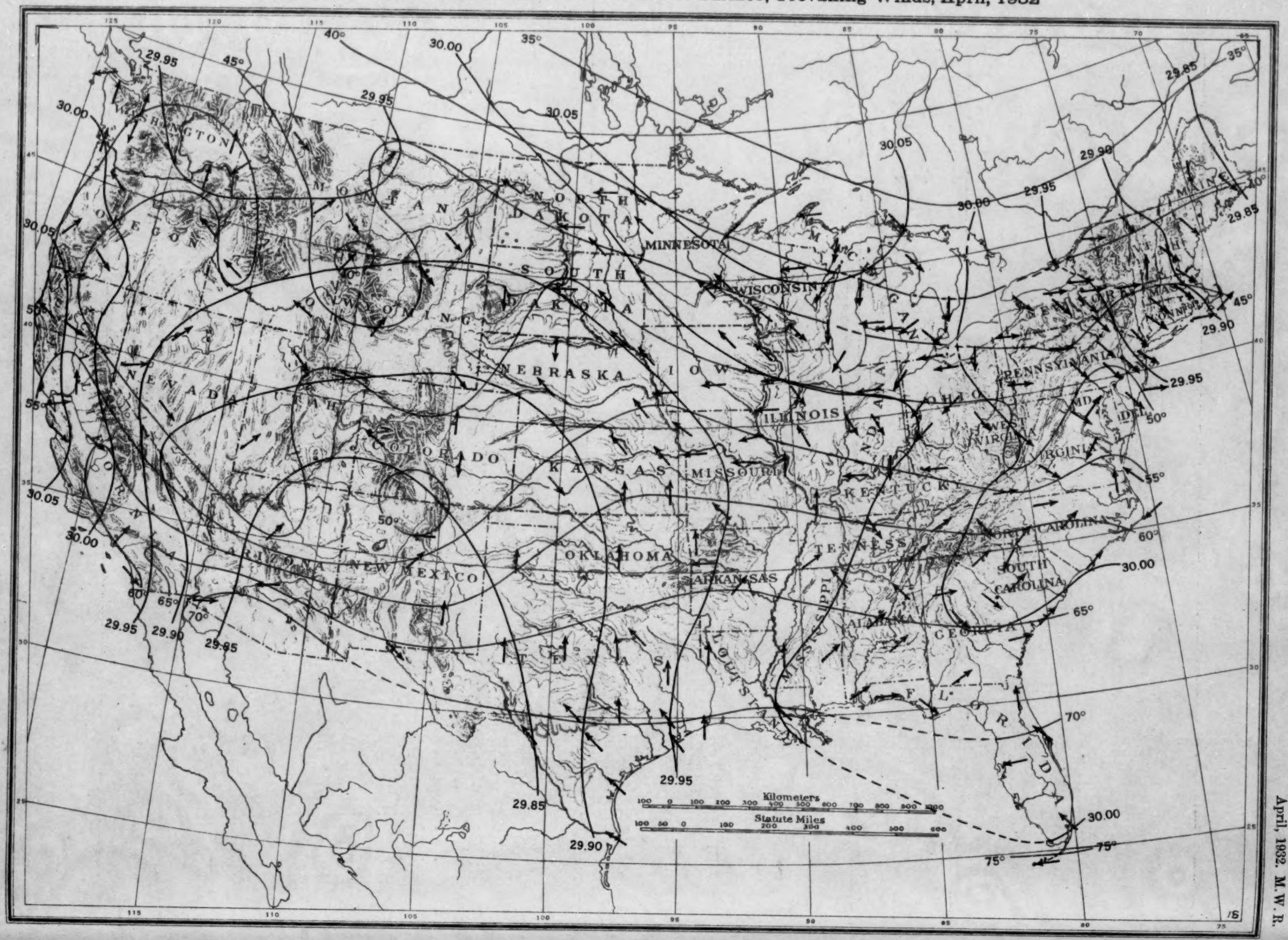

Chart VII. Total Snowfall, Inches, April, 1932

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